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STOCK MARKET SIMULATION

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Abstract

The purpose of the interactive qualifying project was to learn and invest in the stock market simulation program while trying to make a profit. Gaining knowledge about the stock market, the different factors affecting the market, and the different strategies used to trade stocks were helpful in completing the project. During these two terms of working on this project, along with the 5 weeks of investing in the simulation program, it was helpful in gaining real trading experience for future actual investments.

Acknowledgement

The authors of this research paper would like to take a moment to acknowledge the following people for assisting and guiding us through this Interactive Qualifying Project. We would like to first thank our IQP advisor, Professor Dalin Tang of the Mathematical Science Department here at Worcester Polytechnic Institute. We appreciate all the time, advice, and help that Professor Dalin Tang has given us during these past two terms. We would also like to thank our families and friends who motivated and encouraged us to do our best on this project. Without the support of all these people that have been mentioned, our IQP team would not have been successful.

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I. Introduction

During the fall of 2010 at Worcester Polytechnic Institute, our team ran a simulation program of the stock market for our interactive qualifying project. We first started our stock simulation project by setting goals. We were to learn about the stock market and how to apply the different investment strategies. We were to keep track of the stocks' performance with weekly charts and graphs. We needed to analyze and record the gathered data and explain the results. Then conclude which investment strategy performed the best.

We worked on this project for two terms. The simulation itself ran for 5 weeks. The final goal of this interactive qualifying project was to see which member of the team will profit the most when it comes to investing in the stock market. To help us in this ordeal, we read books, research through different websites, and look into previous stock market simulation papers. When we were well informed about the topics, we began writing the paper. Each of us on the team chose an investing strategy and several companies to invest in.

In the beginning of A term, our team learned and wrote about the stock market and how to invest in it. We then wrote about which investing strategy that each of us on the team had chosen as well as companies that we invested in. Then through the middle of A term into B term, we invested in our chosen company's stock with our chosen investing strategy. We watched and analyzed the incoming data that we received from the simulation program. After the 5 weeks of running the simulation was over, we put all of our data, charts, and explained the situation of our company's stocks in the paper. By the end of B term, our team finished the project by completing the paper with our conclusions, outcomes, problems, and profitability reports. Through this interactive qualifying project, our team is now better equipped with the knowledge of the stock market and its' many different investing strategies so that we can invest with real money in the stock market and try to make a profit.

1.1 Goals and Methods

The main objective of our stock market simulation is to gain a fundamental understanding of concepts related to the Stock Market and how to make investment in it in order to make profit. At the same time, we also aim to develop important and intellectual skills such as critical thinking, decision-making, cooperation and communication, money saving and investing. We will conduct a four week simulation program, in general and apply the different types of investment strategies that we researched, and then draw conclusions on whether our observations were accurate.

The first goal of our team is to understand how the stock market operates and to gain the hands-on experience of investment as we run the simulation. Developing the working knowledge and skills is also part of the goal. There are many compounding factors that cause the stock market price to fluctuate such as oil prices, interest rates and so forth, and we need the knowledge that can assist us in making intelligent investment decisions. We will examine the market for several weeks before we make our initial investments.

Our second goal is to investigate into the company and make an investment based on the analysis we have regarding that company. We will look for important factors that will help determine if the company is doing well in the business or not. We will also study the quarterly earnings report and statements of the company that will justify our investigation into the company. We will then weed out the poorly performing sectors and focus on stronger ones based on their historically strong record of performance. Once we know what sector we are going to deal with, we will start examining their stocks and finally make the investment. Basically, we analyzed the company financial statements, study its background, filter out unpromising stocks and then finally, make intelligent investment decision. We believe that all the difficulties that we are going to experience along the way will help us become a better investor in the future.

Our third goal is to study different types of investment strategies and come up with the best investment strategies that can help us best in making investment. We will also study charts and statistics of the companies we are dealing with since it is imperative to understand and be able to use the graphs. It will also help us analyze the stocks as well. We will explain the charts details in later chapters.

1.2 What is the stock market?

What is stock? Stock can be defined as a supply of money a company has raised from individuals or organizations. When you buy a share of stock of a company, you are the company's shareholder and a fraction of the corporation is owned by you. Ownership of shares is documented by issuance of a stock certificate, which is a legal document that specifies the amount of stocks owned by the shareholder. The stock market is the place where company stocks are traded for a set price.

Shareholders invest in companies in hope that the companies will go on to earn money, because they will then receive a share of the profits. Shareholders can have voting rights if they purchased common stocks, which allows them to participate in company meetings to discuss company issues, or they can choose not to have voting rights by purchasing preferred stocks which allows them to receive dividends payment before other investors. The larger share of stock the shareholder holds the more power he has in the company.

Companies list their stocks on an exchange when they want to sell shares. There are many famous stock exchanges which carry out millions of exchanges a day, such as The New York Stock Exchange (NYSE), or The Hong Kong Stock Exchange (HKEX). These exchanges are set up to make it faster and easier for people to buy and sell company stock, usually through an array of modern electronic equipments, although historically stocks exchanges are made by person.

When individuals want to buy or sell stocks, they can call a stock broker company. A stock broker company is a firm authorized to trade stock. Stock brokers receive commission for their services, usually once per trade request. Most major stock exchanges have to be done through stock brokers. However, individuals who only trade in small amounts can trade through the internet, which dramatically decreases the service cost.

The idea of stock trading has been around since the ancient times, but it was not until the 1600s when stocks trading became systematic. Large trading companies such as the Dutch East India Company were founded and created large trading routes that spanned from Europe to Asia, even to America. These companies needed large amounts of money for their long-distance trading, which they raised from investors. Over time, stocks trading became prevalent and that demanded a place where people can trade with ease and convenience. This led to the establishment of first stock exchanges.

The first public stock market is reported to be the Amsterdam Stock Exchange. This Dutch exchange was founded in the 17th century and started the trend of buying and selling shares of company stock. After its opening, world economic flourished and numerous large stock exchanges were built, such as the London Stock Exchange in 1773, and the New York Stock Exchange in 1793, which still remains the largest stock exchange in the world. Today almost all countries in the world have their own stock exchanges, but the largest ones still remains in the most developed countries: United States, England, China, and so forth.

1.3 Speculation and Investment

Speculation is the process of selecting investments by taking a higher risk with the chance of getting a higher return. In other words, speculation is buying something based on its potential selling price, rather than its underlying value. In business world, a speculator seeks to buy and sell and to make profit by taking advantage of market price fluctuations while an investor holds on to the securities that confirm whether the investment is good value or not. Benjamin Graham, an economist and professional investor, mentioned in the book known as “Security Analysis” the distinction between speculation and investment as follows:

“An investment operation is one which, upon through analysis, promises safety of principal and a satisfactory return. Operations not meeting these requirements are speculative”.[2]

The most prominent example to the speculation would be day trading. In day trading, traders will try to buy stocks which have little underlying value predicting that somebody will pay more for it in the near future, and it seemed that there is no limit to how high stocks could soar in day trading. In addition, day traders do not seem to keep the commodities they have bought for a long time. Based on their speculation, they are likely to sell them to somebody else who will pay a higher price. However, there exists a controversy in the market today about day trading. Many professionals and financial advisors argue that the success can be attained only by traditional forms of investing which guarantee the security on money invested and money return. On the other hand, the people who are in favor of day trading argue that there is a profit to be made and the success rate is inherently lower as a result of the higher complexity and risk the traders have to bear.

However, it is essential to speculate and take risks in the business world and it is very important to understand the intelligent and unintelligent speculations. Intelligent speculation is taking the risks that can be justified after weighing the pros and cons of the business deal you are involved in. Unintelligent speculation, on the other hand, is taking the risks lacking proper knowledge and skill for it. The bottom line is that as long as a person is able to distinguish between speculation and investment, it is acceptable to do speculation in some cases. We will apply both speculation and investing in our simulation and we will discuss them in details in later chapters.

1.4 Benefits of Investing

Investing in the stock market has a lot of great benefits that can help anyone achieve their goals. It's also a good way to take advantage of the growing economy and protect your investments from a declining economy. By following the economic indicators, you'll know when the economy is growing and when it is declining. As the economy starts to improve, you can slowly adjust your investment portfolio, adding more stocks. When the economy starts to decline, that would be a good time to sell some of the stocks and possibly purchase bonds or stocks in large corporations.

Taking the time to learn and manage your account can greatly increase your return. A well managed account can easily beat any investment out there. It's better than putting your money in the bank. The stock market has the ability to give you a great return. Compare that to something like certificates of deposit which only increase your account by a small amount. The problem with putting your money in the bank is that often times the interest rate a bank will hand out, is lower than inflation. This means that even though you may have a little more money in a savings account, every year it actually has less buying power due to inflation. Compare that to the stock market which can give you an unlimited return. The stock market also has a great history of going up in the long term. Some stocks also pay a dividend. This means that in addition to the appreciation, you can also get a monthly cash flow. If you hold enough shares this cash flow might even be enough to support you. Even rich people invest in stocks and they do it for one simple reason, it works. There is always risk involved with the stock market, but if you do not take any risks it is harder to move forward.

1.5 Types of Risks in Investing

There are various risks that you take as an investor.

1.5.1 Systematic Risk

Systematic risk is the risk to the market or a particular market segment. Examples of systematic risks are wars, recession and interest because they have a widespread effect and cannot be avoided by diversifying an individual's investment. Since the market is unpredictable, systematic risk always exists. There is always the chance that the entire market or a particular market segment will experience an economic downturn. A strategic use of asset allocation can help limit systematic risk. In the bond market, when interest rates rise, the value of previously issued bonds decreases. Thus decreasing their relative value compared with bonds currently selling in the market. When this happens, new investors will be attracted to the bond market because of the higher rates.

However, the popularity of the bond market has a negative effect on the stock market because investors will tend to leave stocks for bonds, where they can get a higher return with lower risk. When the opposite happens and interest rates drop, investors tend to put money into stocks for their higher potential returns, driving stock prices up. To take advantage of this regular pattern of market ups and downs, it helps to switch around the percentages of your portfolio to asset classes which include equities, bonds, and commodities. This could help counter the negative effects of a decline in one asset class and let you take advantage of gains in the other.

While asset allocation helps lessen systematic risk, diversification can help ease nonsystematic risk. Diversification is a risk management technique involving mixing a variety of investments within a portfolio. This practice suggests that a diversified portfolio will on average pose a lower risk and yield higher returns than any individual investment in the portfolio.

1.5.2 Nonsystematic Risk

Nonsystematic risk is based on unpredictable factors, like poor management decisions within a company or the introduction of competitive products. Because nonsystematic risk is based on the performance of an individual company or groups of companies, diversifying your portfolio by investing in a variety of companies in mutual funds within that class can help counteract nonsystematic risk. If you invest in more than one company, or in a mutual fund, your portfolio will be better protected against the adverse effects of one single company's failure.

1.5.3 Liquidity

If you need invested money during an emergency, a lack of liquidity can be a problem. One of the benefits of holding money in a savings or in a mutual fund is that your assets can turn into liquid. By liquid, I mean how easy your investment can be turned into cash. With a certificate deposit, you can always withdraw the amount you invested, but if you do so before the debt is due, you may lose out on some or all of the interest that you were expected to earn.

Sometimes investing in mutual funds doesn't mean that you're giving up liquidity. If trading volume is high, you should be able to convert your investments to cash rather easily. In the case of the mutual funds, you can sell your shares directly back to the insurer. Or in the case of stocks and bonds, you can sell it through a brokerage account or a secondary market. Unfortunately the risk for selling your shares is that you may have to sell them for less than the amount you invested. That is if the price of the market as a whole has dropped.

1.5.4 Volatility

Another important investment problem is volatility, which means how much and how quickly the value of an investment, market, or market sector changes. The more volatile a stock is, the more risky it becomes and its' value changes. The stocks of smaller newer companies tend to rise and fall more sharply over short periods of time than the stocks of the more established blue chip companies. The reason behind this is that blue chip companies tend to have the financial resources to weather out economic downturns. Similarly, bonds issued by corporations that already have a lot of debt or other financial problems are more volatile than the U.S. Treasuries, which are backed by the credit of the U.S. government. There's more risk when you put your money in volatile investments. While these types of stocks have the potential to produce great returns, there is a good chance that their value could drop. Even the most aggressive investors might choose other assets to help balance their portfolios. You can measure the volatility of a stock by using measurements known as beta and alpha.

Beta is the measurement of a fund or stock versus the Standard & Poor's 500 Stock Index. A fund or stock with a higher beta than the Standard & Poor's 500 will rise or fall greater. On the other hand, a stock or fund with a low beta will rise or fall less. If a stock has a beta of 1.25, then it's considered to be 25% more volatile than the overall market.

Alpha is the measurement of the amount of return expected from an investment or the company's volatility in relation to other investments in the same industry group. An alpha of 1.25 indicates that a stock is projected to rise 25% in a year when the return on the market and stock's beta are both zero. Usually a low priced investment in relation to its alpha is considered a good choice because of its undervalued status.

1.6 Structure of the project report

Our project report will be broken down into several chapters with each chapter have a few sections in them. We'll start off the first chapter of our report by introducing the reader to the stock market as well as the pros and cons of investing. In the second chapter, we'll explain the different types of investment. In the third chapter, we'll explain the investing strategies that we each have selected. The next few chapters will be the simulations of our investing. We will pick stocks from different companies and invest in them with our chosen strategy. The simulation will run for a period of 5 weeks. During that time, each of us on the team will explain the data that we acquired through the simulation program. We'll use charts and graphs to give the reader a more precise look as to what was going on during simulation runs. We'll finish off the report by comparing each of our results with each other and give our conclusions. There'll also be a chapter that will have a brief profile look into the companies that we decided to invest in. Last but not least will be the references, the abstract, table of figures, and the final acquired data.

II. Investment Comparison

The definition of the investment is the commitment of money or capital to purchase financial instruments or other assets in order to gain profitable returns. The profitable returns can be in the form of interest and income, and the investment vehicle is the method by which cash or principle assets are transported into a more valuable form. An investment involves the choice by an individual or an organization. After analyzing the market to place the money in assets of a certain company, individuals expect to gain a profit return from the company in the future. In doing so, investors use different methods depending on the kind of situations they are in to invest their money in the safe zone. Some traits of different investments include: risk, differing rates of return, insurance, protection from inflation, different lengths of time to reach maturity, differing minimum deposits, volatility, and so forth. The types of investment we will discuss in the chapter will be mutual funds, bonds, certificate of deposit, and money market.

2.1 Mutual Funds

Mutual funds have been extremely popular for many decades because they are simple and less risk involved. According to the statistics, more than 80 million people in America invest in mutual funds and it is so popular that it has reached a point where investing means buying mutual funds to most people. Because of its simplicity and low volatility, people are willing to invest in mutual funds more than any other type of investment. The mutual fund investor needs to conduct a research on the business he is going to invest in and make sure that it is doing well in the market. What makes the Mutual Funds very popular is because of their huge returns of profits. Mutual funds must invest millions of dollars into the corporations, and investing such large amounts into small cap companies can have considerable impacts on their trading price.

Therefore, mutual funds are automatically entitled to investing in corporations that have already made the largest gains in their histories corporations, and investing such large amounts into small cap companies can have considerable impacts on their trading price. Therefore, mutual funds are automatically entitled to investing in corporations that have already made the largest gains in their histories

2.2 Bonds

Bond is a type of debt security issued by governments, companies and credit institutions in the primary market. Investors loan money to the corporation at a fixed interest rate, which is often paid every six months until maturity. The main types of bonds are corporate bonds, municipal bonds, and U.S. Treasury bonds, notes and bills, which are all commonly referred to as Treasuries. Backed by the government, these bonds have very low risk, with virtually zero possibility of bonds defaulting.

Bond interest rate is determined by credit quality and maturity date. Maturities range from a 90-day Treasury bill to a 30-year government bond. Corporate and municipals bonds are usually in the three to 10-year range. Typically, riskier bonds have higher interest to pay off for that additional risk. The risk of bonds is that the corporation can't pay the investor back their money, and is called bond defaulting. Government bonds have very low risk, as the possibility of defaulting is virtually zero.

2.3 Certificates of Deposit

Certificates of deposit are debt instruments issued by banks and other financial institutions to investors. In exchange for lending the institution money for an unknown length of time, the investor is paid a locked rate of interest. The age of the certificates of deposit can range from only a few weeks to several years with the interest rate earned by the investor increasing in connection to the time their capital is tied up in the investment. The good news about CDs is that the investor can calculate his expected earnings at the outset of the investment. Certificates of deposited are FDIC insured for up to $100,000 and offer an easy solution for the elderly who desire only to maintain their capital for the remainder of their life. The bad news about CDs is if the investor decides to go for a longer maturity which has a higher rate of interest, they will lose access to his funds and lose their alternative uses of their capital.

2.4 Money market

Money market is a place where short-term financial securities are traded. Involved financial instruments include certificate of deposits, treasury bills, commercial paper and mortgages. Participants borrow or lend these securities for short amount of time, usually not exceeding twelve months. Money used in money markets are liquid, have low risk, with one to two percents of interest a year. It is not entirely a form of investment, but a quick and safe way to borrow and lend money between large financial institutions. For individuals, banks and credit unions often offer money market accounts just like a saving account, only have a higher minimum balance requirements and less withdrawal, but with more returns.

III. Investment Strategies

Investment is similar to gambling, at least to some extents. When investing, it is not possible to know the outcome beforehand. Only after time has passed, the stock price raises or fall, then you will know whether you are a winner or a loser. However, investing is not all about luck. Just like gambling, investing has different strategies to improve your chance of winning. Strategies are very diverse, they can be long term, short term, risky or safe depending on the goals of the investor.

3.1 Gap Trading Strategy

A gap is a change in price levels between the close and open of two consecutive days. Although most technical analysis reports define the four types of gap patterns as Common, Breakaway, Continuation and Exhaustion, those labels will only be applied after the chart pattern is created. This means that the difference between any one type of gap from another is only understandable after the stock continues up or down in some way. Although those classifications are useful for a longer term understanding of how a particular stock or sector reacts, they offer little guidance for trading.

There are four basic types of gaps, full gap up, full gap down, partial gap up, and partial gap down. Each of these gap types has a long trading signal. The difference between a full and partial gap is risk and potential gain. In general, a stock gapping completely above the previous day's high has a significant change in the market's desire to own or sell it. Demand is large enough to force the market maker or floor specialist to make a major price change to accommodate the unfilled orders. Full gapping stocks generally trend farther in one direction than stocks which only partially gap. However, a smaller demand may just require the trading floor to only move price above or below the previous close in order to trigger buying or selling to fill on hand orders. There is a generally a greater opportunity for gain over several days in full gapping stocks.

A full gap up occurs when the opening price is greater than yesterday’s high price. If a stock's opening price is greater than yesterday's high, revisit the 1-minute chart after 10:30 am and sell two ticks above the high achieved in the first hour of trading.

A full gap down occurs when the opening price is less than yesterday's low. Poor earnings, bad news, organizational changes and market influences can cause a stock's price to drop uncharacteristically. If a stock's opening price is less than yesterday's low, sell equal to two ticks more than yesterday's low.

A partial gap up occurs when today's opening price is higher than yesterday's close, but not higher than yesterday's high. The process for a long entry is the same for full gaps in that one revisits the 1 minute chart after 10:30 am and sells two ticks above the high achieved in the first hour of trading.

A partial gap down occurs when the opening price is below yesterday's close, but not below yesterday's low. If this happens, revisit the 1 minute chart after 10:30 am and sell two ticks above the high achieved in the first hour of trading. If the volume requirement is not met, the safest way to play a partial gap is to wait until the price breaks the previous high.

An example of a full gap up is shown on the next page. In the chart for Cisco (CSCO) , the open price for June 2, indicated by the small tick mark to the left of the second bar in June (green arrow), is higher than the previous day's close, shown by the right-side tick mark on the June 1 bar.

Figure 3.1.1 Full gap up chart of Cisco Systems, Inc.

An example of a full gap down is shown. The chart for Amazon (AMZN) below shows both a full gap up on August 18 (green arrow) and a full gap down the next day (red arrow).

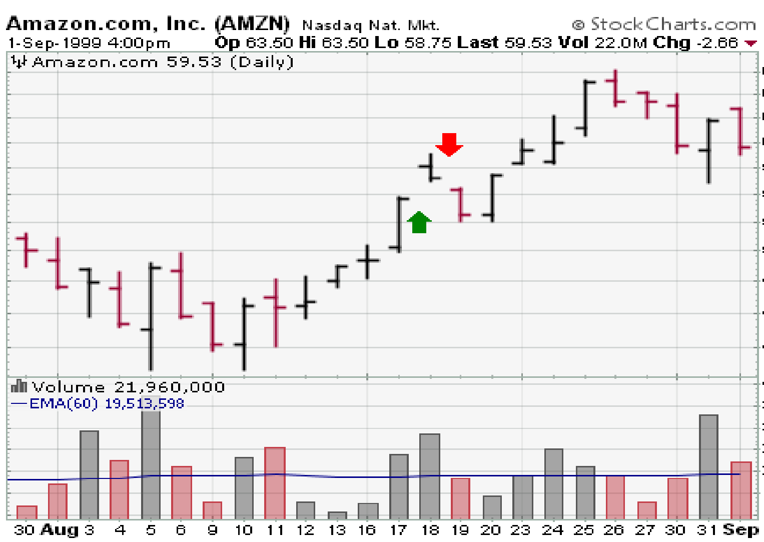

Figure 3.1.2 Full gap down chart of Amazon.com, Inc.

An example of a partial gap up is shown. The chart for Earthlink (ELNK) depicts the partial gap up on June 1 (red arrow), and the full gap up on June 2 (green arrow).

Figure 3.1.3 Partial gap up chart of EarthLink, Inc.

An example of a partial gap down is shown. The red arrow on the chart for Offshore Logistics (OLG) , below, shows where the stock opened below the previous close, but not below the previous low.

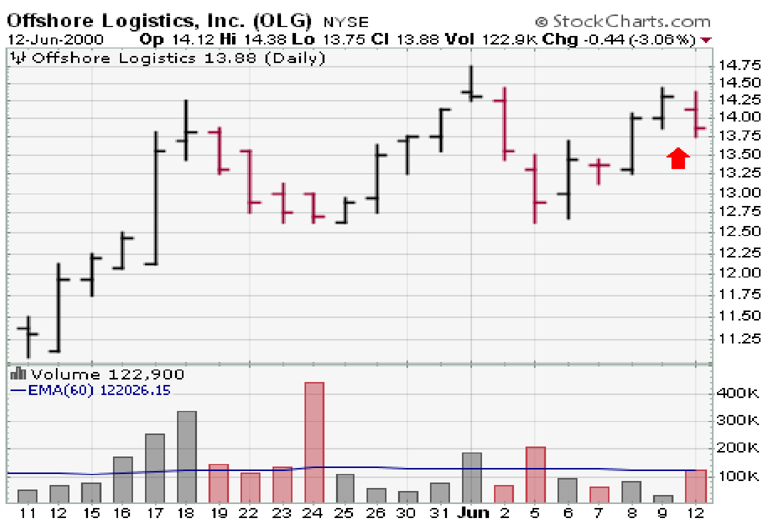

Figure 3.1.4 Partial gap down chart of Offshore Logistics, Inc.

3.2 Investment basics: The Buy-and-Hold Method

The buy-and-hold-the-market approach is a fundamental investment strategy and is the benchmark against which any other approaches to market investing should be measured. This strategy provides the returns by buying and holding the stock market, and is developed on the view that in the long run financial markets give a good rate of return despite periods of volatility or decline.

The buy-and-hold investment method is used as a benchmark because no other investment approach based on analysis is valid unless it can outperform the market over the long run. When an investment produces a return that's above the market return with the same risk, the difference between the two returns is referred to as an excess return. The excess return represents the added value of the approach that's used.

There are two different stock market views that decide an investor’s strategy. According to the efficient market theory, stock prices reflect all publicly available information concerning that stocks price are very close to the true value of the stock. It doesn’t mean that the price reflects the value of stock at all times, but that prices on average reflect the stock's true value, with possible variations. On other hands, the random walk theory explains that these variations are unpredictable; sometimes they are positive and sometimes negative. As such, they cannot be used to obtain excess returns.

Therefore, the investor who believes in the efficient market view would see no point in pursuing the value investing approach which finds stocks that are selling significantly above or below their true value, because the price very closely reflects the stock's true value. Alternatively, this investor would concentrate on developing a more efficient portfolio rather than concentrating on specific stock selection, a portfolio that provides returns closest to the market's return at a specified level of market risk.

Investors who believe in the inefficient market view thinks that variations in the way people receive and evaluate information cause the prices of some stocks to deviate significantly from their true value. Therefore, they see occasions for finding under- and overpriced stocks through diligent analysis, and believe that they're able to outperform a buy-and-hold-the-market strategy.

Based on substantial research evidence, many analysts believe that the market often is inefficient, and that there are indeed opportunities for outperforming the market. The excess return potential generally appears to be in the range of 2 to 6 percent annually. Over a lifetime of investing, even relatively small additional returns such as this can lead to substantially greater wealth.

3.3 Growth Investing

Growth investing is basically the direct contrast to value investing. Value investors are strictly concerned with stocks that, at this moment, are trading for less than their true value. Growth investors focus on the future potential of a company, with much less emphasis on its present price by looking at the company's long-term growth. Unlike value investors, growth investors buy stocks that are trading higher than their current intrinsic worth but this is done with the belief that the companies' intrinsic worth will grow and therefore exceed their current valuations.

As the name suggests, growth stocks are companies that grow substantially faster than others, which mainly occurs in young, developing companies. The theory is that growth in earnings and/or revenues will directly translate into an increase in the stock price. Typically a growth investor looks for investments in rapidly expanding industries, especially those related to new technology such as computers and electronics. Profits are realized through capital gains and not dividends as nearly all growth companies reinvest their earnings and do not pay a dividend.

Growth investors are concerned with a company's future growth potential, but there is no absolute formula for evaluating this potential. Every method of picking growth stocks requires some individual interpretation and judgment. Growth investors use certain methods - or sets of guidelines or criteria - as a framework for their analysis, but these methods must be applied with a company's particular situation in mind. More specifically, the investor must consider the company in relation to its past performance and its industry's performance. The application of any one guideline or criterion may therefore change from company to company and from industry to industry.

3.4 Dollar Cost Averaging

Dollar cost averaging is a technique designed to reduce market risk through the systematic purchase of securities at predetermined intervals and set amounts. Many successful investors already practice without realizing it. Many others could save themselves a lot of time, effort and money by using this method. Instead of investing assets in a lump sum, the investor works his way into a position by slowly buying smaller amounts over a longer period of time. This spreads the cost basis out over several years, providing insulation against changes in market price.

In theory, dollar-cost averaging allows you to invest smaller portions of your money over a longer period of time, reducing the chance that you pay a price too high for any individual investment. By investing the same dollar amount each time, you buy more shares when the price is lower and fewer shares when the price is higher. Investing in the stock market as soon as possible with whatever money you have available, in order to form your ideal asset allocation, beats dollar-cost averaging in the long run. Dollar-cost averaging would leave your ideal allocation unfulfilled by leaving a larger percentage of your total assets in cash, not invested. If you buy individual stocks of a healthy company, the price should move in an upward trend over the long term.

Dollar-cost averaging will never be able to make up lost ground compared to investing an available lump sum because you will, on average, dollar-cost average your way into higher prices. While there may be exceptions when looking at your investment performance in the short term, especially in an environment where stocks are stagnant or declining, but as a long term investing strategy, dollar-cost averaging fails. Small instances of luck will eventually give way to major trends.

Psychologically, however, dollar-cost average has a more important rol**e.** Spreading out the short-term exposure to any specific day's stock price can make an investment in the stock market feel less risky. If one would otherwise be concerned about his investments that might fall 1%, 5%, 10%, or more in one day, dollar-cost averaging can help allay those fears.

Although it may seem a little bit hard to understand how the dollar cost averaging method works, it is easy to see with the following explanation. The rule of thumb for every person who invests in the stock market is "Buy Low and Sell High" and we all agree with that. The reason dollar cost averaging works is that if someone invests steadily over a given period of time his dollars will be able to buy more shares when the market is artificially low, and less when it is artificially high. In other words, when you use dollar cost averaging strategy to buy stocks, you have already set up the plan and you are buying automatically low from time to time. You do not need to apply more complicated strategies to make sure you are buying low.

3.5 What is Fundamental analysis?

Fundamental analysis is the examination of the forces that affect the condition of the economy, industry groups, and companies. As with most analysis, the goal is to derive a forecast and profit from future price movements. At the company level, fundamental analysis may involve the examination of financial data, management, business concepts and competition. At the industry level, there might be an examination of supply and demand forces for the products offered. For the national economy, fundamental analysis might focus on economic data to analysis the present and future growth of the economy. To predict future stock prices, fundamental analysis combines economic, industry, and company analysis to derive a stock's current fair value and predict future value. If the fair value is not equal to the current stock price, fundamental analysts believe that the stock is either over or under valued and the market price will ultimately move towards fair value. Fundamentalists do not follow the advice of the skeptic person and their belief that markets are not efficient. But by believing that prices do not correctly show all of the available information, fundamental analysts look to capitalize on the price differences.

Fundamental analysis can be valuable, but it should be approached with caution. If you are reading research written by a sell side analyst, it is important to be familiar with the analyst behind the report. We all have personal differences and every analyst has some sort of differences. There is nothing wrong with this and the research can still be of great value. Learn what the ratings mean and the track record of an analyst before jumping off the deep end. Corporate statements and press releases offer good information but they should be read with a healthy degree of skepticism to separate the facts from the spin. Press releases don't happen by accident. They are an important public relations tool for companies. Investors should become skilled readers to weed out the important information and ignore the hype.

3.5.1 The Strengths of Fundamental Analysis

Fundamental analysis is good for long-term investments based on long-term trends. The ability to identify and predict long-term economic, demographic, technological or consumer trends can benefit patient investors who pick the right industry groups or companies. Fundamental analysis will help identify companies that represent a good value. Fundamental analysis can help uncover companies with valuable assets, a strong balance sheet, stable earnings, and staying power. One of the most obvious rewards of fundamental analysis is the development of a complete understanding of the business.

After time consuming research and analysis, an investor will be familiar with the key revenue and profit factors behind a company. Earnings and earnings expectations can be influential factors of equity prices. Even some technicians will agree to that. A good understanding can help investors avoid companies that are used to shortfalls and identify those that continue to deliver. In addition to understanding the business, fundamental analysis allows investors to develop an understanding of the key value factors and companies within an industry.

A stock's price is heavily influenced by its industry group. By studying these groups, investors can better position themselves to identify opportunities that are high risk, low risk, growth oriented, value driven, non cyclical, cyclical or income base. Stocks move as a group. By understanding a company's business, investors can better position themselves to categorize stocks within their industry group. Business can change rapidly as well as the revenue of a company. Knowing a company's business and being able to place it in a group can make a huge difference.

3.5.2 Weaknesses of Fundamental Analysis

Fundamental analysis may offer excellent insights, but it can be extraordinarily time consuming. Time consuming models often produce values that are different to the current price taken place on Wall Street. When this happens, the analyst basically claims that the whole street is wrong. This is not to say that there are not misunderstood companies out there, but it is to say that the market price and Wall Street is wrong.

One weakness is the valuation techniques which can differ depending on the industry group and specifics of each company. For this reason, a different technique and model is required for different industries and different companies. This can get quite time consuming, which can limit the amount of research that can be performed. Another weakness is the fair value which is based on ideas. Any changes to growth can greatly change the ultimate valuation. Fundamental analysts are generally aware of this and use sensitive analysis to present a base case valuation, an average case valuation and a worst case valuation. However, even on a worst case valuation, most models are almost always bullish, the only question is how much so.

The majority of the information that goes into the analysis comes from the company itself. Companies employ investor relations managers specifically to handle the analyst community and release information. When it comes to massaging the data or spinning the announcement, CFOs and investor relations managers are professionals. Only buy side analysts tend to venture past the company statistics. Buy side analysts work for mutual funds and money managers. They read the reports written by the sell side analysts who work for the big brokers. These brokers are also involved in underwriting and investment banking for the companies.

Even though there are restrictions in place to prevent a conflict of interest, brokers have an ongoing relationship with the company under analysis. When reading these reports, it is important to take into consideration any biases a sell side analyst may have. The buy side analyst, on the other hand, is analyzing the company purely from an investment standpoint for a portfolio manager. If there is a relationship with the company, it is usually on different terms. In some cases this may be as a large shareholder.

It used to be that free cash flow or earnings were used with a multiplier to arrive at a fair value. However, because so many companies were and are losing money, it has become popular to value a business as a multiple of its revenues. This would seem to be okay except that the multiple was higher than the PE of many stocks.

3.6 What is Technical Analysis?

Technical Analysis is the forecasting of future financial price movements based on an examination of past price movements. Like weather forecasting, technical analysis does not result in absolute predictions about the future. Instead, technical analysis can help investors anticipate what is going to happen to prices over time. Technical analysis uses a wide variety of charts that show price over time. Technical analysis is applicable to stocks, commodities, futures or any tradable instrument where the price is influenced by the forces of supply and demand. Price refers to any combination of the open, high, low, or closes for a given security over a specific time frame. The time frame can be based on 1 minute, 5 minutes, 10 minutes, 15 minutes, 30 minutes, hourly, daily, weekly, monthly price data or many years.

Technical analysts consider the market to be 80% psychological and 20% logical. Fundamental analysts consider the market to be 20% psychological and 80% logical. Psychological or logical may be open for debate, but there is no questioning the current price of a security. After all, it is available for all to see and nobody doubts its legitimacy. The price set by the market reflects the sum knowledge of all participants, and we are not dealing with lightweights here. These participants have considered everything and settled on a price to buy or sell. These are the forces of supply and demand at work. By examining price action to determine which force is prevailing, technical analysis focuses directly on the bottom line. The bottom line being what is the price, where has it been, and where is it going?

Even though there are some universal principles and rules that can be applied, it must be remembered that technical analysis is more an art form than a science. As an art form, it is subject to interpretation. However, it is also flexible in its approach and each investor should use only that which suits his or her style. Developing a style takes time, effort and dedication, but the rewards can be significant.

3.6.1 Strengths of Technical Analysis

If the objective is to predict the future price, then it makes sense to focus on price movements. Price movements usually precede fundamental developments. By focusing on price action, technicians are automatically focusing on the future. The market is thought of as a leading indicator and generally leads the economy by 6 to 9 months. To keep pace with the market, it makes sense to look directly at the price movements. Even though the market is acceptable to sudden reactions, hints usually develop before significant moves. A technician will refer to periods of accumulation as evidence of an impending advance and periods of distribution as evidence of an impending decline.

Simple chart analysis can help identify support and resistance levels. These are usually marked by periods of the trading range where the prices move within a confined range for an extended period, telling us that the forces of supply and demand are deadlocked. When prices move out of the trading range, it signals that either supply or demand has started to get the upper hand. If prices move above the upper band of the trading range, then demand is winning. If prices move below the lower band, then supply is winning.

Even if you are a tried and true fundamental analyst, a price chart can offer plenty of valuable information. The price chart is an easy to read historical account of a security's price movement over a period of time. Charts are much easier to read than a table of numbers. On most stock charts, volume bars are displayed at the bottom. With this historical picture, it is easy to identify the following issues. Issues like past and present volatility, historical volume or trading levels and relative strength of a stock versus the overall market. Also included are the reactions prior to and after important events.

Technical analysis can help with timing a proper entry point. Some analysts use fundamental analysis to decide what to buy and technical analysis to decide when to buy. It is no secret that timing can play an important role in performance. Technical analysis can help spot demand and supply levels as well as breakouts. Simply waiting for a breakout above resistance or buying near support levels can improve returns. It is also important to know a stock's price history. If a stock you thought was great for the last 2 years has traded flat for those two years, it would appear that Wall Street has a different opinion. If a stock has already advanced significantly, it may be wrong to wait for a pullback. Or, if the stock is trending lower, it might pay to wait for buying interest and a trend reversal.

3.6.2 Weaknesses of Technical Analysis

Just as with fundamental analysis, technical analysis is subjective and our personal differences can be reflected in the analysis. It is important to be aware of these differences when analyzing a chart. If the analyst is a bull, then a bullish view will overshadow the analysis. On the other hand, if the analyst is a disgruntled bear, then the analysis will probably have a bearish view.

Furthering the separate argument is the fact that technical analysis is open to interpretation. Even though there are standards, many times two technicians will look at the same chart and paint two different scenarios or see different patterns. Both will be able to come up with logical support and resistance levels as well as key breaks to justify their position. While this can be frustrating, it should be pointed out that technical analysis is more like an art than a science, somewhat like economics. Is the cup half-empty or half-full? It is in the eye of the beholder.

Technical analysis has been criticized for being too late. By the time the trend is identified, a substantial portion of the move has already taken place. After such a large move, the reward to risk ratio is not great.

Even after a new trend has been identified, there is always another "important" level close at hand. Technicians have been accused of sitting on the fence and never taking an unqualified stance. Even if they are bullish, there is always some indicator or some level that will qualify their opinion.

Not all technical signals and patterns work. When you begin to study technical analysis, you will come across an array of patterns and indicators with rules to match. For instance: A sell signal is given when the neckline of a head and shoulders pattern is broken. Even though this is a rule, it is not steadfast and can be subject to other factors such as volume and momentum. In that same vein, what works for one particular stock may not work for another. A 50-day moving average may work great to identify support and resistance for IBM, but a 70-day moving average may work better for Yahoo. Even though many principles of technical analysis are universal, each security will have its own idiosyncrasies.

3.7 Trading Strategies for This Project

For this project, we will be using three major strategies:

The strategy that I (Duyanh Le) am going to use during the 5 week simulation will be the gap trading strategy. The basic rule of gap trading is to let the market open for one hour so the stock price can establish its range. Once a position is entered, I will see what category of gap trading the stock falls into. If the opening price of the stock is greater than yesterdays' high price, than it is a full gap up. For full gap up trading, I will sell the stock when the price is 2 ticks above the high in the first hour of trading. Two ticks would be 8%. If the opening price of the stock is less than yesterdays' low price, than it is a fall gap down. For full gap down trading, I will sell the stock when the price is 2 ticks more than yesterdays' low price. If the opening price of the stock is greater than yesterdays' closing price but less than yesterdays' high price, than it is a partial gap up. For partial gap up trading, I will sell the stock when the price is 2 ticks above the high in the first hour of trading. If the opening price of the stock is less than yesterdays' closing price but greater than yesterdays' high price, than it is a partial gap down. For partial gap down trading, I will sell the stock when the price is 2 ticks above the high in the first hour of trading. I will calculate and set an 8% trailing stop to exit a long position.

The trailing stop was later changed to .5%. So that also meant that two ticks would now be changed to 1%. A trailing stop is simply an exit threshold that follows the rising price. For instance let's say that I buy a stock at $100. I set the exit at no more than 8% below that, or $92. Once I sell the stock, I will repurchase the same stock with more shares the next trading day. If the price does not fall or reach the selling points, then I will hold onto the stocks. If there is not enough interest in selling or buying a stock after the initial orders are filled, the stock will return to its trading range quickly. Entering a trade for a partially gapping stock generally calls for either greater attention or closer trailing stops of 5-6%. In simple terms, the Gap Trading Strategies are a rigorously defined trading system that uses specific criteria to enter and exit.

It was apparently obvious that from Sept.27 through Oct. 6, the strategy that I had implemented was flawed. It seems that my stocks never got anywhere close to the 8% trailing stop. I did the calculations to see what would happen if I changed the trailing stop to 7, 6, 5, 4, 3, and 2%. It was still very hard even to have the trailing stop at 2% since the stocks' price never fell down to that level. So I decided to change the trailing stop to .5%. So that also meant that two ticks would now be changed to 1%. This number may seem very small but at the prices at which I bought my stocks, this seems reasonable. I will implement this new trailing stop number starting on Thursday, Oct. 7. 2010.

The strategy that I (Bao Nguyen) will employ is the buy and hold strategy, which focuses on the growth investing method, which primarily trades with stocks from companies with above average to high growth potential. These companies are usually young, or specialize in the fields of new technologies such as electronics and World Wide Web.

The strategy that I (Kyaw Thiha) am going to use for this project will be dollar cost averaging which is an investment strategy designed to reduce the volatility in which securities are purchased in fixed dollar amounts at regular intervals, regardless of what direction the market is moving. We are going to run a 5 week simulation for this strategy and discuss our results in details in later chapters.

IV. Simulation A: Gap Trading

The gap trading simulation consists of four stocks that I felt were good enough to invest in since they're been trending high the last few months on the stock market. During the 5 weeks of simulation, I expect to see some profits and in some cases, no profits at all. The program that I have chosen for my stock market simulation is from wallstreetsurvivor.com. I will start off with $100,000 to invest in. I will purchase the maximum number of shares of the stock that is available for me at the time. I will wait until 10:30 am to figure out what type of gap trading strategy to implement for each of my four stocks. There are four types, full gap up and down, and partial gap up and down. Then I will determine the 8% trailing stop and sell when the price falls to that point. If the price does not fall to the 8% trailing stop or does not reach the two tick mark depending on what type of gap the stock is, then I will hold onto the stock.

It was apparently obvious that from Sept.27 through Oct. 6, the strategy that I had implemented was flawed. It seems that my stocks never got anywhere close to the 8% trailing stop or the two tick mark of 8%. I did the calculations to see what would happen if I changed the trailing stop to 7, 6, 5, 4, 3, and 2%. It was still very hard even to have the trailing stop at 2% since the stocks' price never fell down to that level. So I decided to change the trailing stop to .5%. So that also meant that two ticks would now be changed to 1%. This number may seem very small but at the prices at which I bought my stocks, this seems reasonable. I will implement this new trailing stop number starting on Thursday, Oct. 7. 2010.

4.1 Selection of stocks

After choosing a trading investment strategy, next I need to find some companies to invest in. After careful consideration and research, I ended up selecting four companies. Listed below are the companies that I have selected and why I chose to invest in them. The companies are Columbia Sportswear Company (COLM), Costco Wholesale Corporation (COST), Google Inc. (GOOG), and Panera Bread Company (PNRA).

Columbia Sportswear Company (COLM)

Columbia Sportswear Company (Columbia) is engaged in the design, sourcing, marketing and distribution of outdoor apparel, footwear, accessories and equipment. COLM's PE ratio is among the highest of any stock in the Apparel/Accessories industry and signals that investors have high hopes for this company's future business prospects. COLM’s PE ratio is 28.27. It’s earnings per share is 2.02. Its’ current ratio is 4.84. A number greater than 2 is considered to be good. In my opinion this stock looks to be a strong gainer.

Costco Wholesale Corporation (COST)

Costco Wholesale Corporation (Costco) operates membership warehouses that offer its’ members low prices on a limited selection of branded and selected private label products in a range of merchandise categories. COST's PE ratio is among the highest of any stock in the Retail (Specialty) industry and signals that investors have high hopes for this company's future business prospects. COST’s PE ratio is 23.23. Its’ earnings per share is 2.8. Its’ current ratio is 1.18 which is not very good. In my opinion this stock has the potential to be an above average gainer over the short term.

Google Inc. (GOOG)

Google Inc. maintains an index of Websites and other online content, and makes this information freely available through its search engine to anyone with an Internet connection. GOOG's PE ratio is in line with the Computer Services industry average and implies that investors do not see anything special about this company's prospects. GOOG’s PE ratio is 22.82. Its’ earnings per share is 23.03. Its’ current ratio is 6.12. A number greater than 2 is considered to be good. In my opinion this stock has the potential to be an above average gainer over the short term.

Panera Bread Company (PNRA)

Panera Bread Company (Panera Bread) along with its subsidiaries is a national bakery-cafe concept with 1,380 Company-owned and franchise-operated bakery-cafe locations in 40 states and in Ontario, Canada. PNRA's PE ratio is among the highest of any stock in the Restaurants industry and signals that investors have high hopes for this company's future business prospects. Additionally, during the past year, earnings growth has outpaced its historical five year growth rate. PNRA’s PE ratio is 27.35. Its’ earnings per share is 3.23. Its’ current ratio is 2.09. A number greater than 2 is considered to be good. In my opinion this stock has the potential to be an above average gainer over the short term.

4.2 Week 1 Simulation

Listed below are the gap types tables for week 1 of the stock market simulation for the four companies that I have decided to invest in. Each table shows the opening, high, low, and closing prices of the stock for that certain trading day, usually from Monday through Friday.

With this data I can easily figure out what type of gap that the stock falls into. This will enable me to figure out what price to sell the stock at.

A full gap up occurs when the opening price is greater than yesterday’s high price. If a stock's opening price is greater than yesterday's high. A full gap down occurs when the opening price is less than yesterday's low. A partial gap up occurs when today's opening price is higher than yesterday's close, but not higher than yesterday's high. A partial gap down occurs when the opening price is below yesterday's close, but not below yesterday's low.

Columbia Sportswear Company (COLM)

Date	Gap Type	Open Price	High Price	Low Price	Close Price
Sept. 24	-	-	$57.69	$56.94	$57.19
Sept. 27	Partial Gap Dn	$56.98	$58.15	$56.98	$57.51
Sept. 28	Partial Gap Up	$57.80	$59.00	$56.88	$58.86
Sept. 29	Partial Gap Dn	$58.52	$58.73	$57.91	$58.48
Sept. 30	Partial Gap Up	$58.68	$59.13	$57.63	$58.44
Oct. 1	Partial Gap Up	$58.64	$59.11	$57.73	$58.31

Table 4.1: Columbia Sportswear Company (COLM) Gap type table for week 1

Costco Wholesale Corporation (COST)

Date	Gap Type	Open Price	High Price	Low Price	Close Price
Sept. 24	-	-	$64.31	$62.78	$64.05
Sept. 27	Partial Gap Dn	$63.82	$64.14	$63.63	$63.73
Sept. 28	Partial Gap Up	$63.81	$65.11	$63.69	$65.00
Sept. 29	Partial Gap Dn	$64.85	$65.22	$64.39	$64.67
Sept. 30	Partial Gap Up	$64.91	$65.00	$64.07	$64.79
Oct. 1	Partial Gap Up	$64.92	$65.25	$64.50	$65.05

Table 4.2: Costco Wholesale Corporation (COST) Gap type table for week 1

Google Inc. (GOOG)

Date	Gap Type	Open Price	High Price	Low Price	Close Price
Sept. 24	-	-	$527.29	$518.26	$527.29
Sept. 27	Full Gap Up	$529.24	$536.85	$528.85	$530.41
Sept. 28	Partial Gap Up	$533.48	$533.59	$518.45	$527.17
Sept. 29	Partial Gap Up	$527.85	$532.94	$524.71	$527.69
Sept. 30	Partial Gap Up	$529.16	$531.87	$518.92	$525.79
Oct. 1	Partial Gap Up	$530.00	$530.62	$523.00	$525.62

Table 4.3: Google Inc. (GOOG) Gap type table for week 1

Panera Bread Company (PNRA)

Date	Gap Type	Open Price	High Price	Low Price	Close Price
Sept. 24	-	-	$87.90	$86.70	$87.83
Sept. 27	Partial Gap Dn	$87.56	$89.73	$87.18	$89.25
Sept. 28	Full Gap Up	$89.26	$89.76	$87.44	$88.69
Sept. 29	Partial Gap Up	$88.79	$89.49	$88.16	$89.16
Sept. 30	Full Gap Up	$89.52	$90.17	$88.00	$87.21
Oct. 1	Partial Gap Up	$89.12	$89.25	$87.21	$88.34

Table 4.4: Panera Bread Company (PNRA) Gap type table for week 1

4.2.1 Analysis of Gap Trading Portfolio trading (Week 1)

Table 4.5 shows my investments during the first week of the stock market simulation. Also included in the Net Cost / Proceeds title was a commissions' fee of $10 buy or sell. Proceeds are the money that I receive when the shares are sold. Total cash is the cash I still have. There is a starting value which is adjusted each time I buy or sell the stock. Total asset is my total cash which is also an indicator of my performance. Total profit is profit/loss that I have accumulated to date.

Date	Symbol	Buy/Sell	Price	Shares	Net Cost / Proceeds	Profits / Loss	Total Cash	Total Profit
Sept. 26							100,000.00	
Sept. 27	COLM	Buy	$57.87	430	$24,894.10	-	$75,105.90	-
Sept. 27	COST	Buy	$64.01	390	$24,973.90	-	$50,132.00	-
Sept. 27	GOOG	Buy	$532.88	46	$24,522.48	-	$25,609.52	-
Sept. 27	PNRA	Buy	$89.15	280	$24,972.00	-	$637.52	-

Table 4.5: Gap Trading Portfolio Investments Table for Week 1

Once I bought shares of my chosen companies stock, I had to calculate and set an 8% trailing stop to exit a long position. During the first week of the simulation, all four of my stocks never got anywhere close to the 8% trailing stop or reached the two tick mark of 8%. Shown above is the data that I collected from the first week of the simulation for my gap trading portfolio.

This 8% trailing stop strategy was ended after Wednesday, Oct.6, 2010. After Wednesday, Oct. 6, 2010, I changed the trailing stop to .5%. So that also meant that two ticks would now be changed to 1%.

My initial account contained $100,000 for investment in company stocks. As you can see, I did not spend all of the $100,000.00 to invest. Each of those four stocks had a limit as to how many shares I could purchase. So I was left over with $637.52. Since my trailing stop was at 8%, none of my stocks reached that point or the two tick mark for me to sell it off. So therefore, I had to hold onto my four stocks after the first week of the simulation. So to summarize my first week of the stock market simulation, I bought shares of stock and implemented my strategy. Due to the strategy rules, my stocks did not meet the two tick mark or the trailing sell point in order to sell them.

4.2.2 Gap Trading Portfolio Total Assets after 1 Week

Figure 4.1, below is a representative of the total assets after 1 week for the gap trading portfolio. The daily value of my portfolio as well as any trading can be seen in Appendix A-1. This is the finalized record of all trades and assets during the five week simulation.

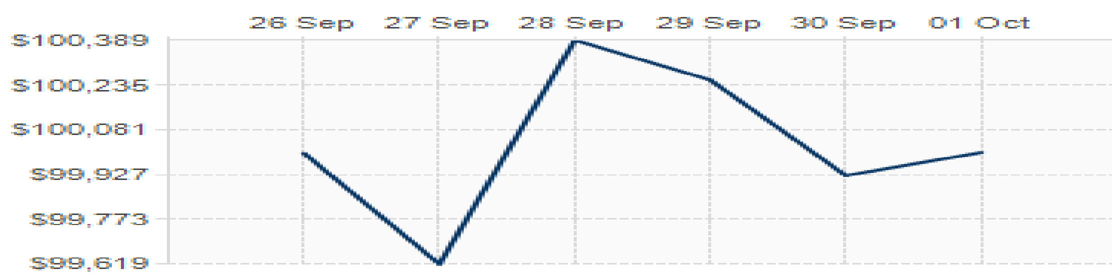

Figure 4.1: Gap Trading Portfolio Total Assets after 1 Week

4.3 Week 2 Simulation

Listed below are the gap types tables for week 2 of the stock market simulation for the four companies that I have decided to invest in. Each table shows the opening, high, low, and closing prices of the stock for that certain trading day, usually from Monday through Friday. With this data I can easily figure out what type of gap that the stock falls into. This will enable me to figure out what price to sell the stock at.

A full gap up occurs when the opening price is greater than yesterday's high price. If a stock's opening price is greater than yesterday's high. A full gap down occurs when the opening price is less than yesterday's low. A partial gap up occurs when today's opening price is higher than yesterday's close, but not higher than yesterday's high. A partial gap down occurs when the opening price is below yesterday's close, but not below yesterday's low.

Columbia Sportswear Company (COLM)

Date	Gap Type	Open Price	High Price	Low Price	Close Price
Oct. 4	Partial Gap Dn	$58.16	$58.82	$57.72	$57.83
Oct. 5	Partial Gap Up	$58.13	$59.82	$57.78	$59.07
Oct. 6	Partial Gap Dn	$58.81	$59.12	$58.45	$59.00
Oct. 7	Full Gap Up	$59.52	$59.52	$58.62	$59.09
Oct. 8	Partial Gap Up	$59.14	$60.57	$58.93	$60.21

Table 4.6: Columbia Sportswear Company (COLM) Gap type table for week 2

Costco Wholesale Corporation (COST)

Date	Gap Type	Open Price	High Price	Low Price	Close Price
Oct. 4	Partial Gap Up	$65.06	$65.24	$64.53	$64.56
Oct. 5	Partial Gap Up	$65.00	$65.00	$64.33	$64.66
Oct. 6	Partial Gap Dn	$63.00	$65.46	$62.81	$65.41
Oct. 7	Partial Gap Dn	$65.23	$65.27	$64.43	$65.25
Oct, 8	Full Gap Dn	$64.40	$64.95	$63.94	$64.29

Table 4.7: Costco Wholesale Corporation (COST) Gap type table for week 2

Google Inc. (GOOG)

Date	Gap Type	Open Price	High Price	Low Price	Close Price
Oct. 4	Partial Gap Dn	$524.95	$528.25	$518.85	$522.35
Oct. 5	Full Gap Up	$528.38	$540.00	$521.89	$538.23
Oct. 6	Partial Gap Up	$539.26	$529.95	$529.94	$534.35
Oct. 7	Partial Gap Up	$536.13	$537.20	$529.25	$530.00
Oct. 8	Partial Gap Up	$532.77	$537.61	$527.62	$536.35

Table 4.8: Google Inc. (GOOG) Gap type table for week 2

Panera Bread Company (PNRA)

Date	Gap Type	Open Price	High Price	Low Price	Close Price
Oct. 4	Partial Gap	$88.34	$88.90	$87.08	$88.44
Oct. 5	Full Gap Up	$89.19	$91.75	$88.93	$91.60
Oct. 6	Full Gap Up	$91.80	$92.00	$88.55	$88.66
Oct. 7	Partial Gap Up	$89.14	$90.55	$88.14	$89.88
Oct. 8	Partial Gap Dn	$89.88	$90.00	$88.88	$89.11

Table 4.9: Panera Bread Company (PNRA) Gap type table for week 2

4.3.1 Analysis of Gap Trading Portfolio trading for Week 2

Table 4.10 shows my investments during the second week of the stock market simulation. Also included in the Net Cost / Proceeds title was a commissions' fee of $10 buy or sell. Proceeds are the money that I receive when the shares are sold. Total cash is the cash I still have. There is a starting value which is adjusted each time I buy or sell the stock. Total asset is my total cash which is also an indicator of my performance. Total profit is profit/loss that I have accumulated to date.

It was apparently obvious that from Sept.27 through Oct. 6, the strategy that I had implemented was flawed. It seems that my stocks never got anywhere close to the 8% trailing stop or reached the two tick mark of 8%. Thus there was no way for me to ever sell my stocks and make a profit. I did the calculations to see what would happen if I changed the trailing stop to 7, 6, 5, 4, 3, and 2%. It was still very hard even to have the trailing stop at 2% since the stocks' price never fell down to that level. So I decided to change the trailing stop to .5%. So that also meant that two ticks would now be changed to 1%. This number may seem very small but at the prices at which I bought my stocks, this seems reasonable. I will implement this new trailing stop number starting on Thursday, Oct. 7. 2010.

Date	Symbol	Buy/Sell	Price	Shares	Net Cost / Proceeds	Profits / Loss	Total Cash	Total Profit
Sept. 26							100,000.00	
Sept. 27	COLM	Buy	$57.87	430	$24,894.10		75,105.90	
Oct. 7	COLM	Sell	$59.17	430	$25,433.10	$539.00	100,539.00	$539.00
Sept. 27	COST	Buy	$64.01	390	$24,973.90		75,565.10	
Oct. 7	COST	Sell	$64.64	390	$25,199.60	$225.70	100,764.7	$764.70
Sept. 27	GOOG	Buy	$532.88	46	$24,522.48		76,242.22	
Oct. 7	GOOG	Sell	$534.37	46	$24,571.02	$48.54	100,813.24	$813.24
Sept. 27	PNRA	Buy	$89.15	280	$24,972.00		75,841.24	
Oct. 7	PNRA	Sell	$88.86	280	$24,870.80	($101.20)	100,712.04	$712.04
Oct. 8	COLM	Buy	$59.27	420	$24,903.40		75,808.64	
Oct. 8	COLM	Sell	$59.22	420	$24,883.40	($20.00)	100,692.04	$692.04
Oct. 8	COST	Buy	$64.61	385	$24,884.85		75,807.19	
Oct. 8	COST	Sell	$64.10	385	$24,668.50	($216.35)	100,475.69	$475.69
Oct. 8	PNRA	Buy	$89.87	280	$25,173.60		75,302.09	
Oct. 8	PNRA	Sell	$88.98	280	$24,924.00	($249.60)	100,226.09	$226.09
Oct. 8	GOOG	Buy	$530.42	47	$24,939.74		75,286.35	

Table 4.10: Gap Trading Portfolio Investments Table for Week 2

As you can see, after I changed my trading sell point to .5% on Oct. 7, I was able to sell the four stocks I had purchased back on Sept. 27. I was able to make a profit on three out of the four stocks on Oct. 7. Columbia Sportswear Company stock was the biggest gainer for me, giving me a $539.00 profit. After my four stocks had either reached the two tick mark or the trailing selling point, I repurchased the same four stocks again the next business day on Oct.8. The amount of shares that I purchased on Oct. 8, were slightly different from the earlier shares that I bought on Sept.27.

During this second week of the simulation where I bought a second round of shares of stock on Oct. 8, three of out of my four stocks, Costco Wholesale Corporation, Columbia Sportswear Company, and Panera Bread Company hit the .5% trailing sell point during the midday hours, which forced me to sell them off resulting in a loss of profits. Even though on

Oct. 8 the Columbia Sportswear Company closed out at $60.21, I still lost money on it because the stock hit the trailing stop point around midday at $59.22. So had I not sold that stock when it hit the .5% trailing sell point, I would have ended up with a profit at the end of the trading day. It was just bad luck that the COLM stock hit the .5% trailing sell point first before later rallying on.

My fourth stock which was Google Inc. never reached the .5% trailing sell point or the two tick mark of 1%. The closet it got to the two tick mark was at $537. 61. If the price of the Google Inc. stock had climbed .39 more cents to $538.00, I would have been able to sell it and make at least $200.00. Since the stock didn't hit the two tick mark or the trailing sell point, I was forced to hold onto it until the next business trading day when the stock market opens again which would be on Monday. So after two weeks of investing, I made a profit of $266.09 without including the Google Inc. stock which I am currently holding onto. So to summarize my second week of the simulation, I made a few changes to my trading strategy which allowed me to trade the stocks more often which resulted in making some losses and profits here and there.

4.3.2 Gap Trading Portfolio Total Assets after 2 Weeks

Figure 4.2, below is a representative of the total assets after 2 weeks for the gap trading portfolio. The daily value of my portfolio as well as any trading can be seen in Appendix A-1. This is the finalized record of all trades and assets during the five week simulation.

Figure 4.2: Gap Trading Portfolio Total Assets after 2 Weeks

4.4 Week 3 Simulation

Listed below are the gap types tables for week 3 of the stock market simulation for the four companies that I have decided to invest in. Each table shows the opening, high, low, and closing prices of the stock for that certain trading day, usually from Monday through Friday. With this data I can easily figure out what type of gap that the stock falls into. This will enable me to figure out what price to sell the stock at.

A full gap up occurs when the opening price is greater than yesterday's high price. If a stock's opening price is greater than yesterday's high. A full gap down occurs when the opening price is less than yesterday's low. A partial gap up occurs when today's opening price is higher than yesterday's close, but not higher than yesterday's high. A partial gap down occurs when the opening price is below yesterday's close, but not below yesterday's low.

Columbia Sportswear Company (COLM)

Date	Gap Type	Open Price	High Price	Low Price	Close Price
Oct. 11	Partial Gap Up	$60.53	$61.19	$60.01	$60.62
Oct. 12	Partial Gap Up	$60.63	$60.83	$59.85	$60.56
Oct. 13	Full Gap Up	$61.06	$61.22	$59.95	$60.04
Oct. 14	Full Gap Dn	$59.72	$60.11	$57.99	$58.00
Oct. 15	Partial Gap Up	$58.67	$58.68	$57.23	$57.77

Table 4.11: Columbia Sportswear Company (COLM) Gap type table for week 3

Costco Wholesale Corporation (COST)

Date	Gap Type	Open Price	High Price	Low Price	Close Price
Oct. 11	Full Gap Dn	$63.69	$64.49	$63.28	$64.32
Oct. 12	Partial Gap Dn	$63.94	$64.09	$63.31	$63.34
Oct. 13	Full Gap Dn	$63.20	$63.96	$63.00	$63.36
Oct. 14	Partial Gap Up	$63.11	$63.86	$62.91	$63.18
Oct. 15	Partial Gap Up	$63.46	$63.77	$63.21	$63.70

Table 4.12: Costco Wholesale Corporation (COST) Gap type table for week 3

Google Inc. (GOOG)

Date	Gap Type	Open Price	High Price	Low Price	Close Price
Oct. 11	Full Gap Up	$538.48	$544.60	$537.17	$538.84
Oct. 12	Full Gap Up	$540.12	$545.99	$537.79	$541.39
Oct. 13	Full Gap Up	$547.00	$547.49	$541.40	$543.30
Oct. 14	Partial Gap Up	$544.16	$545.25	$537.11	$540.93
Oct. 15	Full Gap Up	$599.30	$601.34	$591.60	$601.45

Table 4.13: Google Inc. (GOOG) Gap type table for week 3

Panera Bread Company (PNRA)

Date	Gap Type	Open Price	High Price	Low Price	Close Price
Oct. 11	Partial Gap Dn	$88.96	$90.80	$88.73	$90.14
Oct. 12	Partial Gap Dn	$90.01	$90.80	$89.06	$90.67
Oct. 13	Full Gap Up	$91.11	$91.40	$89.95	$90.88
Oct. 14	Partial Gap Up	$90.97	$91.90	$90.88	$91.74
Oct. 15	Full Gap Up	$91.97	$92.29	$91.18	$92.03

Table 4.14: Panera Bread Company (PNRA) Gap type table for week 3

4.4.1 Analysis of Gap Trading Portfolio trading for Week 3

Table 4.15 shows my investments during the third week of the stock market simulation. Also included in the Net Cost / Proceeds title was a commissions' fee of $10 buy or sell. Proceeds are the money that I receive when the shares are sold. Total cash is the cash I still have. There is a starting value which is adjusted each time I buy or sell the stock. Total asset is my total cash which is also an indicator of my performance. Total profit is profit/loss that I have accumulated to date.

Date	Symbol	Buy/Sell	Price	Shares	Net Cost / Proceeds	Profits / Loss	Total Cash	Total Profit
Oct. 11	GOOG	Sell	$540.87	47	$25,410.89	$471.15	100,697.24	$697.24
Oct. 11	COLM	Buy	$60.63	400	$24,262.00		76,435.24	
Oct. 11	COLM	Sell	$60.21	400	$24,074.00	($188.00)	100,509.24	$509.24
Oct. 11	PNRA	Buy	$89.11	280	$24,960.80		75,548.44	
Oct. 11	PNRA	Sell	$89.81	280	$25,136.80	$176.00	100,685.24	$685.24
Oct. 11	COST	Buy	$63.61	390	$24,817.90		75,867.34	
Oct. 12	COST	Sell	$63.71	390	$24,836.90	$19.00	100,704.24	$704.24
Oct. 12	COLM	Buy	$60.44	416	$25,153.04		75,551.20	
Oct. 12	COLM	Sell	$60.19	416	$25,029.04	($124.00)	100,580.24	$580.24
Oct. 12	GOOG	Buy	$542.99	46	$24,987.54		75,592.70	
Oct. 12	GOOG	Sell	$540.53	46	$24,854.38	($133.16)	100,447.08	$447.08
Oct. 12	PNRA	Buy	$89.46	280	$25,058.80		75,388.28	
Oct. 13	PNRA	Sell	$90.08	280	$25,212.40	$153.60	100,600.68	$600.68
Oct. 13	COST	Buy	$63.06	390	$24,603.40		75,997.28	
Oct. 13	COST	Sell	$63.89	390	$24,907.10	$303.70	100,904.38	$904.38
Oct. 13	COLM	Buy	$60.74	400	$24,306.00		75,598.38	

Oct. 13	COLM	Sell	$60.54	400	$24,206.00	($100.00)	100,804.38	$804.38
Oct. 13	GOOG	Buy	$545.31	46	$25,094.26		75,710.12	
Oct. 13	GOOG	Sell	$544.64	46	$25,043.44	($50.82)	100,753.56	$753.56
Oct. 14	COLM	Buy	$59.83	400	$23,942.00		76,811.56	
Oct. 15	COLM	Sell	$57.50	400	$22,990.00	($952.00)	99,801.56	($198.44)
Oct. 14	COST	Buy	$63.70	390	$24,853.00		74948.56	
Oct. 15	COST	Sell	$63.26	390	$24,661.40	($191.60)	99,609.96	($390.04)
Oct. 14	GOOG	Buy	$542.05	46	$24,944.30		74,665.66	
Oct. 15	GOOG	Sell	$599.71	46	$27,576.66	$2,632.36	102,242.32	$2,242.32
Oct. 14	PNRA	Buy	$91.55	270	$24,728.50		77,513.82	
Oct. 15	PNRA	Sell	$91.45	270	$24,681.50	($47.00)	102,195.32	$2,195.32

Table 4.15: Gap Trading Portfolio Investments Table for Week 3

By changing the two tick mark to 1% and trading sell point to .5%, I was able to trade stocks on a constant basis during this third week of simulation. I was able to buy a number of shares of stock and selling them that very same day for either a profit or a loss. I would have to wait until after 10:30 am to figure out the gap type. Once I figured out what type of gap the stock fell into based on the opening price, I could calculate the two tick mark and trading sell point.

As you can see, during the third week of simulation, from Oct. 11 through Oct. 15, I was on a constant rollercoaster motion when it came to profits. I would sell the stocks that I bought if it reached the two tick mark or trailing sell point, if it didn't then I would hold onto it. I was able to make profits on these stocks one day and then lose it all the next day. The biggest event surrounding this third week of the simulation was on Friday, Oct. 15. I lost all of my profits that I made during the first two weeks of trading based on one stock, the Columbia Sportswear Company. Last week this stock was my biggest gainer but this week was the opposite. That stock on which I bought on Thursday Oct. 14, did not hit the two tick mark or the trailing sell point, so I decided to hold onto that stock without selling it.

The next day though I ended up losing a total of $952.00 on that stock that day, the most I lost so far during the entire stock market simulation! Incredibly there was also good news for me that very same day. Google has announced that the company beat its' third quarter expected results, resulting in a huge $50.00 rise in stock prices that day. I was able to make a profit of $2,632.36! This stock was by far my biggest gainer of the third week. I started off the week with a total profit of $509.24 and ended the week with a total profit of $2,195.32. So to summarize the third week of the simulation, on a certain day I lost all my profits but made it all back plus an addition increase in profits thanks in large part to a rise in stock price for the Google stock.

4.4.2 Gap Trading Portfolio Total Assets after 3 Weeks

Figure 4.3, above is a representative of the total assets after 3 weeks for the gap trading portfolio. The daily value of my portfolio as well as any trading can be seen in Appendix A-1. This is the finalized record of all trades and assets during the five week simulation.

Figure 4.3: Gap Trading Portfolio Total Assets after 3 Weeks

4.5 Week 4 Simulation

Listed below are the gap types tables for week 4 of the stock market simulation for the four companies that I have decided to invest in. Each table shows the opening, high, low, and closing prices of the stock for that certain trading day, usually from Monday through Friday. With this data I can easily figure out what type of gap that the stock falls into. This will enable me to figure out what price to sell the stock at.

A full gap up occurs when the opening price is greater than yesterday's high price. If a stock's opening price is greater than yesterday's high. A full gap down occurs when the opening price is less than yesterday's low. A partial gap up occurs when today's opening price is higher than yesterday's close, but not higher than yesterday's high. A partial gap down occurs when the opening price is below yesterday's close, but not below yesterday's low.

Columbia Sportswear Company (COLM)

Date	Gap Type	Open Price	High Price	Low Price	Close Price
Oct. 18	Partial Gap Up	$58.21	$58.21	$57.19	$57.96
Oct. 19	Full Gap Dn	$57.16	$58.00	$56.41	$56.85
Oct. 20	Partial Gap Up	$57.29	$57.86	$57.22	$57.29
Oct. 21	Partial Gap Up	$57.63	$57.83	$56.95	$57.51
Oct. 22	Full Gap Dn	$53.63	$55.00	$51.94	$52.53

Table 4.16: Columbia Sportswear Company (COLM) Gap type table for week 4

Costco Wholesale Corporation (COST)

Date	Gap Type	Open Price	High Price	Low Price	Close Price
Oct. 18	Partial Gap Dn	$63.44	$63.80	$63.13	$63.21
Oct. 19	Full Gap Dn	$62.66	$63.14	$61.90	$62.21
Oct. 20	Partial Gap Up	$62.35	$63.07	$62.25	$62.61
Oct. 21	Partial Gap Dn	$62.64	$63.89	$62.54	$63.60
Oct. 22	Partial Gap Up	$63.84	$64.10	$63.22	$64.03

Table 4.17: Costco Wholesale Corporation (COST) Gap type table for week 4

Google Inc. (GOOG)

Date	Gap Type	Open Price	High Price	Low Price	Close Price
Oct. 18	Partial Gap Dn	$600.55	$619.55	$600.55	$617.71
Oct. 19	Full Gap Dn	$608.25	$614.82	$602.66	$607.83
Oct. 20	Partial Gap Up	$608.14	$617.38	$607.50	$607.98
Oct. 21	Partial Gap Up	$611.87	$616.00	$606.00	$611.99
Oct. 22	Partial Gap Dn	$611.92	$614.82	$610.05	$612.53

Table 4.18: Google Inc. (GOOG) Gap type table for week 4

Panera Bread Company (PNRA)

Date	Gap Type	Open Price	High Price	Low Price	Close Price
Oct. 18	Partial Gap Dn	$91.79	$91.81	$90.23	$91.08
Oct. 19	Partial Gap Dn	$90.27	$91.40	$90.14	$90.46
Oct. 20	Partial Gap Up	$90.80	$90.83	$89.60	$89.91
Oct. 21	Partial Gap Dn	$90.13	$90.62	$89.36	$89.66
Oct. 22	Partial Gap Up	$90.22	$94.59	$90.05	$94.40

Table 4.19: Panera Bread Company (PNRA) Gap type table for week 4

4.5.1 Analysis of Gap Trading Portfolio trading for Week 4

Table 4.20 shows my investments during the fourth week of the stock market simulation. Also included in the Net Cost / Proceeds title was a commissions' fee of $10 buy or sell. Proceeds are the money that I receive when the shares are sold. Total cash is the cash I still have. There is a starting value which is adjusted each time I buy or sell the stock. Total asset is my total cash which is also an indicator of my performance. Total profit is profit/loss that I have accumulated to date.

Date	Symbol	Buy/Sell	Price	Shares	Net Cost / Proceeds	Profits / Loss	Total Cash	Total Profit
Oct. 19	COLM	Buy	$57.41	400	$22,974.00		79,221.32	
Oct. 19	COLM	Sell	$57.83	400	$23,122.00	$148.00	102,343.32	$2,343.32
Oct. 19	COST	Buy	$63.04	390	$24,595.60		77,747.72	
Oct. 19	COST	Sell	$62.80	390	$24,482.00	($113.60)	102,229.72	$2,229.72
Oct. 19	PNRA	Buy	$90.47	270	$24,437.44		77,792.28	
Oct. 19	PNRA	Sell	$91.17	270	$24,605.90	$168.46	102,398.18	$2,398.18
Oct. 19	GOOG	Buy	$609.00	41	$24,979.00		77,419.18	
Oct. 22	GOOG	Sell	$611.33	41	$25,054.53	$75.53	102,473.71	$2,473.71
Oct. 20	COLM	Buy	$57.29	400	$22,926.00		79,547.71	
Oct. 20	COLM	Sell	$57.69	400	$23,066.00	$140.00	102,613.71	$2,613.71
Oct. 20	COST	Buy	$62.49	390	$24,381.10		78,232.61	
Oct. 20	COST	Sell	$63.04	390	$24,575.60	$194.50	102,808.21	$2,808.21
Oct. 20	PNRA	Buy	$90.47	270	$24,436.90		78,371.31	
Oct. 22	PNRA	Sell	$93.08	270	$25,121.60	$684.70	103,492.91	$3,492.91
Oct. 21	COLM	Buy	$57.29	444	$25,602.16		77,890.75	
Oct. 21	COLM	Sell	$57.51	444	$25,524.44	($77.72)	103,415.19	$3,415.19
Oct. 21	COST	Buy	$62.96	390	$24,565.38		78,849.81	
Oct. 21	COST	Sell	$63.32	390	$24,684.80	$119.42	103,534.61	$3,534.61
Oct. 22	COLM	Buy	$53.20	444	$23,630.80		79,903.81	
Oct. 22	COST	Buy	$63.40	400	$25,370.00		54,533.81	

Table 4.20: Gap Trading Portfolio Investments Table for Week 4

This fourth week of the stock market simulation was very profitable for me. I was constantly buying and selling shares of stock for a profit. There was only two trades this fourth week of the simulation where I had a loss. The first happened on Tuesday Oct.19, I lost a total of $113.60 when I sold my shares of Costco Wholesale Corporation. The second stock which was the Columbia Sportswear Company, I ended up losing a total of $77.72 which happened on Thursday Oct. 21.

Other than those two losses, this was a very solid week of trading for me. My total profits for the fourth week continued to add up from $2,343.32 to $3,534.61. The biggest gainer for me this fourth week of simulation was the Panera Bread Company. On Friday Oct. 22, I sold shares of that company for a profit of $684.70. I was very happy that my total profits were going up. I believed that my change of the two tick mark and trailing sell point in my strategy played a huge part in this. So to summarize the fourth week of the simulation, I was making a profit at a constant rate.

4.5.2 Gap Trading Portfolio Total Assets after 4 Weeks

Figure 4.4, below is a representative of the total assets after 4 weeks for the gap trading portfolio. The daily value of my portfolio as well as any trading can be seen in Appendix A-1. This is the finalized record of all trades and assets during the five week simulation.

Figure 4.4: Gap Trading Portfolio Total Assets after 4 Weeks

4.6 Week 5 Simulation

Listed below are the gap types tables for week 5 of the stock market simulation for the four companies that I have decided to invest in. Each table shows the opening, high, low, and closing prices of the stock for that certain trading day, usually from Monday through Friday. With this data I can easily figure out what type of gap that the stock falls into. This will enable me to figure out what price to sell the stock at.

A full gap up occurs when the opening price is greater than yesterday’s high price. If a stock's opening price is greater than yesterday's high. A full gap down occurs when the opening price is less than yesterday's low. A partial gap up occurs when today's opening price is higher than yesterday's close, but not higher than yesterday's high. A partial gap down occurs when the opening price is below yesterday's close, but not below yesterday's low.

Columbia Sportswear Company (COLM)

Date	Gap Type	Open Price	High Price	Low Price	Close Price
Oct. 25	Partial Gap Dn	\$52.50	\$53.08	\$51.75	\$51.88
Oct. 26	Partial Gap Dn	\$51.80	\$52.49	\$51.50	\$51.61
Oct. 27	Full Gap Up	\$53.04	\$53.23	\$52.01	\$52.49
Oct. 28	Partial Gap Dn	\$52.73	\$53.00	\$52.04	\$52.14
Oct. 29	Partial Gap Dn	\$52.18	\$52.62	\$51.90	\$52.25

Table 4.21: Columbia Sportswear Company (COLM) Gap type table for week 5

Costco Wholesale Corporation (COST)

Date	Gap Type	Open Price	High Price	Low Price	Close Price
Oct. 25	Full Gap Up	\$64.12	\$64.77	\$64.01	\$64.11
Oct. 26	Full Gap Dn	\$63.52	\$64.19	\$63.44	\$63.68
Oct. 27	Full Gap Dn	\$63.38	\$63.38	\$62.51	\$62.98
Oct. 28	Partial Gap Up	\$63.06	\$63.25	\$62.50	\$62.80
Oct. 29	Partial Gap Dn	\$62.61	\$62.90	\$62.52	\$62.77

Table 4.22: Costco Wholesale Corporation (COST) Gap type table for week 5

Google Inc. (GOOG)

Date	Gap Type	Open Price	High Price	Low Price	Close Price
Oct. 25	Full Gap Up	$615.59	$624.74	$614.97	$616.50
Oct. 26	Full Gap Dn	$613.10	$621.23	$611.03	$618.60
Oct. 27	Partial Gap Dn	$615.77	$620.00	$612.33	$616.47
Oct. 28	Partial Gap Dn	$620.05	$621.00	$613.30	$618.50
Oct. 29	Partial Gap Dn	$617.07	$619.00	$612.99	$613.70

Table 4.23: Google Inc. (GOOG) Gap type table for week 5

Panera Bread Company (PNRA)

Date	Gap Type	Open Price	High Price	Low Price	Close Price
Oct. 25	Full Gap Up	$94.59	$95.41	$93.75	$94.23
Oct. 26	Full Gap Dn	$92.63	$94.63	$92.00	$94.35
Oct. 27	Full Gap Dn	$90.71	$91.37	$89.10	$89.52
Oct. 28	Partial Gap Up	$90.20	$90.62	$88.75	$90.42
Oct. 29	Partial Gap Dn	$90.07	$90.65	$89.43	$89.51

Table 4.24: Panera Bread Company (PNRA) Gap type table for week 5

4.6.1 Analysis of Gap Trading Portfolio trading for Week 5

Table 4.25 shows my investments during the fifth or final week of the stock market simulation. Also included in the Net Cost / Proceeds title was a commissions' fee of $10 buy or sell. Proceeds are the money that I receive when the shares are sold. Total cash is the cash I still have. There is a starting value which is adjusted each time I buy or sell the stock. Total asset is my total cash which is also an indicator of my performance. Total profit is profit/loss that I have accumulated to date.

Date	Symbol	Buy/Sell	Price	Shares	Net Cost / Proceeds	Profits / Loss	Total Cash	Total Profit
Oct. 25	COLM	Sell	$51.84	444	$23,006.96	($623.84)	102,910.77	$2,910.77
Oct. 22	COST	Buy	$63.40	400	$25,370.00		77,540.77	
Oct. 25	COST	Sell	$64.43	400	$25,762.00	$392.00	103,302.77	$3,302.77
Oct. 25	GOOG	Buy	$619.45	41	$25,407.45		77,895.32	
Oct. 25	GOOG	Sell	$621.63	41	$25,476.83	$69.38	103,372.15	$3,372.15
Oct. 25	PNRA	Buy	$95.29	270	$25,738.30		77,633.85	
Oct. 25	PNRA	Sell	$94.28	270	$25,445.60	($292.70)	103,079.45	$3,079.45
Oct. 26	COLM	Buy	$51.80	400	$20,730.00		82,349.45	
Oct. 26	COLM	Sell	$51.85	400	$20,730.00	$0.00	103,079.45	$3,079.45
Oct. 26	COST	Buy	$63.53	400	$25,422.00		77,657.45	
Oct. 26	COST	Sell	$63.69	400	$25,466.00	$44.00	103,123.45	$3,123.45
Oct. 26	GOOG	Buy	$613.53	41	$25,164.73		77,958.72	
Oct. 27	GOOG	Sell	$616.90	41	$25,282.90	$118.17	103,241.62	$3,241.62
Oct. 26	PNRA	Buy	$92.90	270	$25,093.00		78,148.62	
Oct. 27	PNRA	Sell	$89.74	270	$24,219.80	($873.20)	102,368.42	$2,368.42
Oct. 27	COLM	Buy	$53.23	487	$25,933.01		76,435.41	
Oct. 27	COLM	Sell	$52.44	487	$25,528.28	($404.73)	101,963.69	$1,963.69
Oct. 27	COST	Buy	$63.38	400	$25,362.00		76,601.69	
Oct. 27	COST	Sell	$62.79	400	$25,106.00	($256.00)	101,707.69	$1,707.69
Oct. 28	COLM	Buy	$52.65	487	$25,650.55		76,057.14	
Oct. 28	COLM	Sell	$52.24	487	$25,430.88	($219.67)	101,488.02	$1,488.02
Oct. 28	COST	Buy	$62.95	400	$25,190.00		76,298.02	
Oct. 28	COST	Sell	$62.77	400	$25,098.00	($92.00)	101,396.02	$1,396.02
Oct. 28	PNRA	Buy	$89.78	270	$24,250.60		77,145.42	
Oct. 28	PNRA	Sell	$88.84	270	$23,976.80	($273.80)	101,122.22	$1,122.22
Oct. 28	GOOG	Buy	$618.00	41	$25,348.00		75,774.22	
Oct. 28	GOOG	Sell	$616.31	41	$25,258.71	($89.29)	101,032.93	$1,032.93
Oct. 29	COLM	Buy	$52.49	481	$25,257.69		75,775.24	
Oct. 29	COLM	Sell	$52.42	481	$25,204.02	($53.67)	100,979.26	$979.26
Oct. 29	COST	Buy	$62.62	400	$25,058.00		75,921.26	
Oct. 29	COST	Sell	$62.77	400	$25,098.00	$40.00	101,019.26	$1,019.26
Oct. 29	GOOG	Buy	$617.41	40	$24,706.48		76,312.78	
Oct. 29	GOOG	Sell	$613.84	40	$24,543.60	($162.88)	100,856.38	$856.38
Oct. 29	PNRA	Buy	$90.15	279	$25,161.85		75,694.53	
Oct. 29	PNRA	Sell	$89.57	279	$24,980.03	($181.82)	100,674.56	$674.56

Table 4.25: Gap Trading Portfolio Investments Table for Week 5

This fifth and final week of trading in the stock market simulation was a complete disaster for me. All of the profits that I made during the first four weeks, completely disappeared thanks in large part to a very sluggish week of trading. Everyday my stocks dropped at a fast rate hitting the trailing sell point forcing me to sell them off. I noticed that last week when Google announced that they beat their 3rd quarter expectations; the price of the stock of Google skyrocketed. So I figured that when the Panera Bread Company and Columbia Sportswear Company announced that they too have beaten their 3rd quarter expectations this week that their price of stock would rise up as well. Unfortunately that was not the case this time around. The prices of the stock for those two companies fell.

Because of this fallout, I lost a huge amount of money on those two stocks as well as the other two stocks. I was only able make a profit a couple of times this week but that didn't matter because of the losses I accumulated. I'm still in shock at the fact that I lost over $2,000.00 this week. My total profits for the entire 5 weeks of the stock market simulation went from a high of $3,534.61 to a final profit count of $674.56. If last week was my final week of simulation, I would have walked away with a huge total profit of well over $3,500. It seems last week was the climax for my simulation run, as with all climaxes there is always a fast drop and this week was the drop for me. So to summarize this fifth and final week of the stock market simulation, I lost nearly all the profits that I made but I still finished with a profit.

4.6.2 Gap Trading Portfolio Total Assets after 5 Weeks

Figure 4.5, below is a representative of the total assets after 5 weeks for the gap trading portfolio. The daily value of my portfolio as well as any trading can be seen in Appendix A-1. This is the finalized record of all trades and assets during the five week simulation.

Figure 4.5: Gap Trading Portfolio Total Assets after 5 Weeks

V. Simulation B: Buy-and-Hold Strategy and Growth Investing

The buy-and hold strategy is one of the most basic stock investment strategies. During the five week simulation, we will buy stocks from five companies with considerable growth potential and hold the stocks regardless of the changes to the market. In theory, the buy-and hold market is a long-term strategy, so profit made during the five week simulation might not be significant enough to prove the effectiveness of the strategy.

The selected companies are companies with either high growth potential or are expecting a rebound period. The P/E ratio is usually medium to high, since these stocks have good growth history and investors expect the company will grow with the same rate in the future.

5.1 Selection of Stocks

Based on the criteria of growth stock investment, my selected companies are: Carmax Inc. Amazon.com, NVIDIA Corporations, Bank of America Corporations and Medco Health Solutions Inc.

CarMax, INC (KMX)

CarMax, Inc. (CarMax) is a retailer of used cars, which retailed 357,129 used vehicles during the fiscal year ended February 28, 2010. As of February 28, 2010, CarMax operated 100 used car superstores in 46 metropolitan markets. It has a market capitalization of 6.1 billion dollars, a P/E ratio of 17.56x, a PEG(Price/Earning over Growth) of 1.56, all of which represent a high growth potential.

CarMax has a good history of growth, with big periods of rebound in the last five years. Since the beginning of 2009, the company's stock has been increasing significantly from a big price drop. Although the current price of the stock is now equal to its top price during its high growth period in 2007, the price is still expected to rise.

Amazon.com, Inc (AMZN)

Amazon.com, Inc offers services to consumers, sellers, and developers through its retail Websites. The Company offers programs that enable sellers to sell their products on its Websites and their own branded Websites. Amazon.com serves developers through Amazon Web Services, which provides access to technology infrastructure that developers can use to enable any type of business. In addition, the Company generates revenue through co-branded credit card agreements and other marketing and promotional services, such as online advertising. Amazon.com has organized its operations into two principal segments: North America and International. (Yahoo Finance)

Amazon is an internet-based company. With the significant increase in the use and coverage of the internet in the last few years, the company has been growing non-stop. Recently, it also expanded its operation to manufacturing the Kindle reader, which became a hit in the e-reader market. In the beginning of 2010, It also purchased the company Touchco, a touch screen company. The company's stock has a market cap of 68.84 Billion, P/E of 63.65, and a PEG of 2.36. Although it has unusually high stock price and P/E, PEG is very solid, making it a good long-term investment.

NVIDIA Corporations (NVDA)

NVIDIA Corporation (NVIDIA) is a provider of visual computing technologies and the inventor of the graphics processing unit (GPU). The Company's products are designed to generate graphics on workstations, personal computers, game consoles and mobile devices. NVIDIA serves the entertainment and consumer market with its GeForce graphics products, the professional design and visualization market with its Quadro graphics products, the computing market with its Tesla computing solutions products, and the mobile computing market with its Tegra system-on-a-chip products. (Yahoo Finance)

NVIDIA experienced a high spike in the last few years, and is recovering from a big drop. Market cap is 6.51B, P/E is 27.15 and PEG is 1.65. Its' current price is only ¼ of the top price during the spike of 2007, so this is a good time to buy.

Bank of America Corporation (BAC)

Bank of America Corporation, a financial holding company, provides banking and nonbanking financial services and products to individual consumers, small- and middle-market businesses, large corporations, and governments in the United States and internationally. The company's Deposits segment generates savings accounts, money market savings accounts, certificate of deposits, individual retirement accounts, and checking accounts; and Global Card Services segment provides the U.S. consumer and business card, consumer lending, international card and debit card services (Yahoo Finance)

Bank of America also experienced a drop during the economic crisis of 2009, and has been recovering since. Although the recovering rate is low, its is still a very good buy for the long-term investment. Its market cap is 133.45, P/E is 8.75 and PEG is 1.39.

Medco Health Solutions, Inc (MHS)

Medco Health Solutions, Inc., a healthcare company, provides clinically driven pharmacy services for private and public employers, health plans, labor unions, government agencies, and individuals in the United States and internationally. The company's products and services include clinical management that comprises coverage management and utilization management programs; and Rational Med service, which analyzes patients' available prescriptions, inpatient and outpatient medical and laboratory claim records, and engages physicians, pharmacists, and patients in making changes, as well as provides benefit plan designs.(Yahoo Finance)

I chose Medco because it has a good growth potential. Also experienced a drop recently, the company stock is increasing and is expected to be equal or greater than its January top of 67 dollars. Its Market cap is 22.68 B, P/E ratio is 18.44 and PEG is 0.91.

5.2 Week 1 Simulation

5.2.1 Analysis of Week 1 Buy-and-Hold and Growth Portfolio trading

My initial capital of $100,000 is used to buy 5 shares. Because of the nature of the buy-and-hold strategy, I will only sell my stocks at the end of the simulation. However, I will be monitoring and track the performance of the stocks. Please note that each of the transactions include a $10 commission fee. Table 5.1 shows the transactions I made during this week. Figure 5.1 shows the performance of the stocks.

Date	Symbol	Buy/Sell	Price	Shares	Net Cost/ Proceeds	Profit/ Loss	Total Cash	Total Profit
20th Sep							$100,000	
20th Sep	AMZN	Buy	$152.8	150	$22,930	$0	$77070	
30th Sep	BAC	Buy	$13.36	1000	$13,370	$0	$63700	
30th Sep	KMX	Buy	$27.86	896	$24,972.56	$0	$38727.44	
30th Sep	NVDA	Buy	$11.33	2000	$22,670	$0	$16057.44	
30th Sep	MHS	Buy	$52.25	290	$15,162.50	$0	$894.94	

Table 5.1: Buy-and-hold Portfolio Investments Table for Week 1

5.2.2 Week 1 Buy-and-Hold and Growth Portfolio Total Assets

Figure 5.2 shows the total assets that I have at the end of the week, October 1. This week I made a profit of $105.80, for a 0.1058 percent increase. Amazon is the most profitable stock this week, followed by NVIDIA and Medco. The other two companies, Bank of America and Carmax both made a loss. However, I am not going to sell their shares because of the loss. It is normal for the stocks to fluctuate like this and the basics of the buy-and hold strategy is that in the long run, there will be many fluctuations but the general trend of the stock will go up.

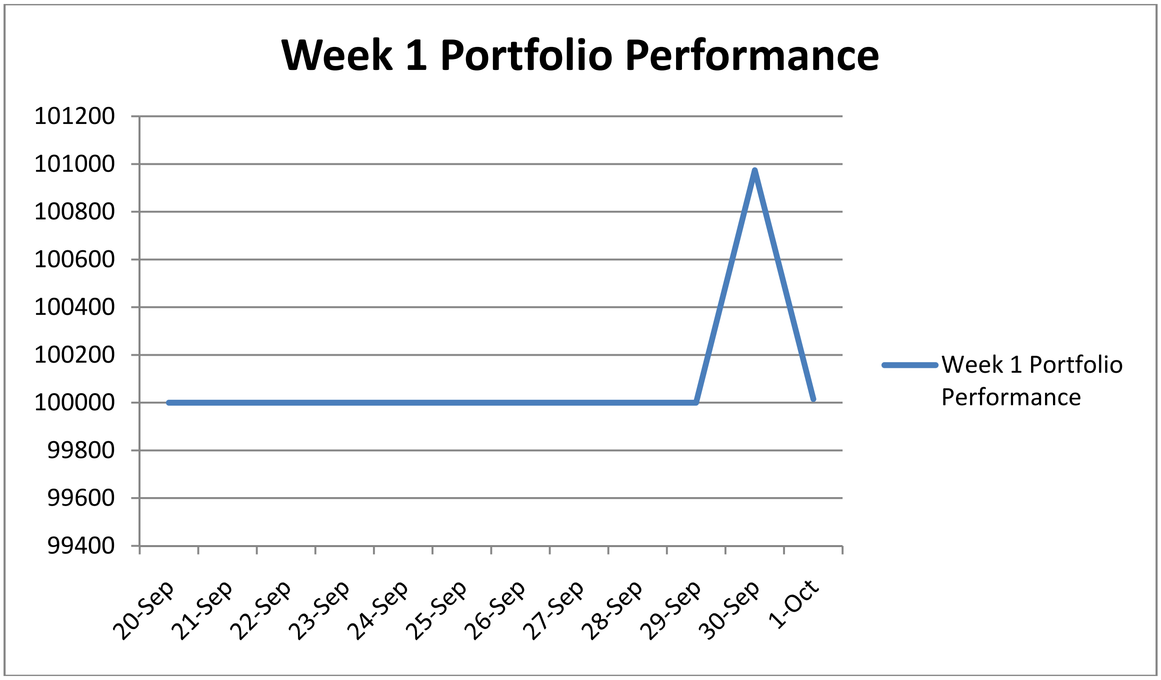

Figure 5.1: Buy-and-hold Portfolio Total Assets for Week 1

Date	Symbol	Buy/ sell	Price	Shares	Net-Cost/ Proceed	Profit/ Loss	Total Cash	Total Portfolio value
Oct. 1	BAC	HOLD	$13.30	1000	$13,300	$60.00	$894.94	
Oct. 1	AMZN	HOLD	$153.71	150	$23,056.50	$136.50	$894.94	
Oct. 1	KMX	HOLD	$27.79	896	$24,899.84	$62.72	$894.94	
Oct. 1	NVDA	HOLD	$11.35	2000	$22,700	$40	$894.94	
Oct. 1	MHS	HOLD	52.29	290	$15,164,10	$11.60	$894.94	1000,015.38

Table 5.2: Buy-and-hold Portfolio Investment Assets, Week 1

5.3 Week 2 Simulation

5.3.1 Analysis of Week 2 Buy-and-Hold and Growth Portfolio trading

This week's performance charts clearly shows some major fluctuations in the portfolio, with the total portfolio value going up to $101.603 on October 5th and immediately dropping to as low as $99.447 on October 6th . By the end of the week, portfolio value rose up again to $101,044.55. Overall, compared to last week total value still went up by 0.098%. These fluctuations fit with the nature of growth stock that spikes and drops are only temporal.

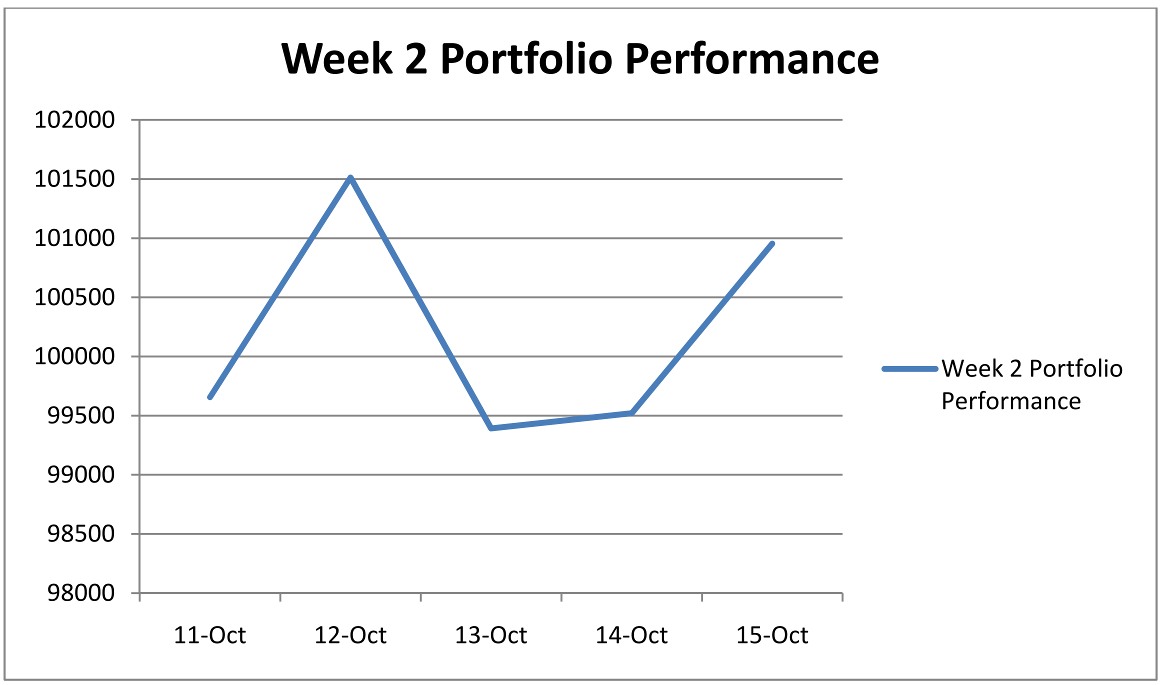

Figure 5.2: Buy-and-hold Portfolio Total Assets for Week 2

This week Carmax stock soared by a 6.42 percent, making the company's new record in 10 years. This however tells that it might not be wise to keep Carmax stock for the rest of the simulation, since this stock seems to be reaching its peak. If Carmax stock continues to rise next week, I will sell it for profit.

NVIDIA, on the other hand, has made a loss but its growth charts still shows that the stock is growing and still hasn't reached last year's height. I will keep this stock because it has potential to grow more during the simulation. Bank of America still hangs in balance, while Medco and Amazon are still constantly growing.

5.3.2 Week 2 Buy-and-Hold and Growth Portfolio Total Assets

Table 5.3 shows the total assets after week 2.

Date	Symbol	Buy/ sell	Price	Shares	Net-Cost/ Proceed	Profit/ Loss	Total Cash	Total Portfolio value
Oct. 8	BAC	HOLD	$13.18	1000	$13,180	$180.00	$894.94	
Oct. 8	AMZN	HOLD	$155.55	150	$23,332.50	$412.50	$894.94	
Oct. 8	KMX	HOLD	$29.65	896	$26,566.40	$1,603.84	$894.94	
Oct. 8	NVDA	HOLD	$10.86	2000	$21,720	$940.00	$894.94	
Oct. 8	MHS	HOLD	$52.62	290	$15,259.80	$107.30	$894.94	100953.64

Table 5.3: Buy-and-hold Portfolio Investment Assets for Week 2

5.4 Week 3 Simulation

5.4.1 Analysis of Week 3 Buy-and-Hold and Growth Portfolio trading

Figure 5.3 shows the portfolio's performance for week 3.

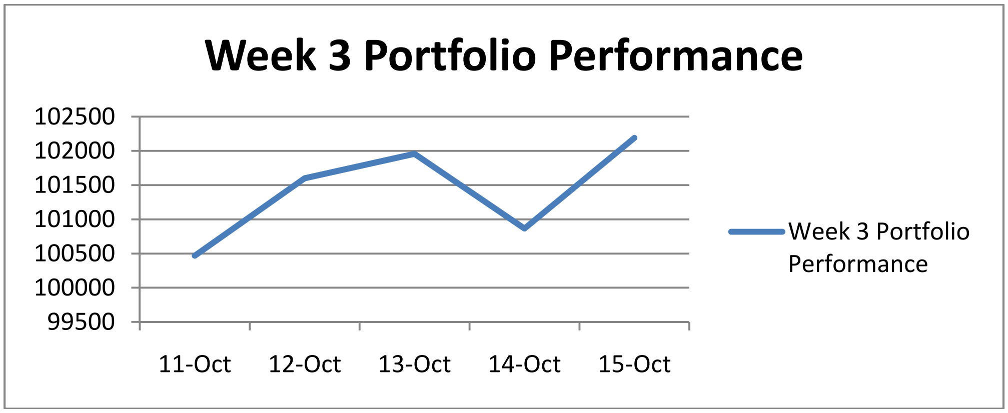

Figure 5.3: Buy-and-hold Portfolio Total Assets for Week 3

5.4.2 Week 3 Buy-and-Hold and Growth Portfolio Total Assets

Table 5.4 shows the total assets after week 3.

Date	Symbol	Buy/ sell	Price	Shares	Net-Cost/ Proceed	Profit/ Loss	Total Cash	Total Portfolio value
Oct. 15	BAC	HOLD	$11.98	1000	$11,980	$1,390	$894.94	
Oct. 15	AMZN	HOLD	$164.64	150	$24,696	$1,766	$894.94	
Oct. 15	KMX	HOLD	$29.46	896	$26,396.16	$1,423.6	$894.94	
Oct. 15	NVDA	HOLD	$11.29	2000	$22,580	$90	$894.94	
Oct. 15	MHS	HOLD	$53.33	290	$15,465.7	$303.2	$894.94	$102,012.8

Table 5.4: Buy-and-hold Portfolio Investment Assets for Week 3

5.5 Week 4 Simulation

5.5.1 Analysis of Week 4 Buy-and-Hold and Growth Portfolio trading

Figure 5.4 shows the portfolio's performance for week 4.

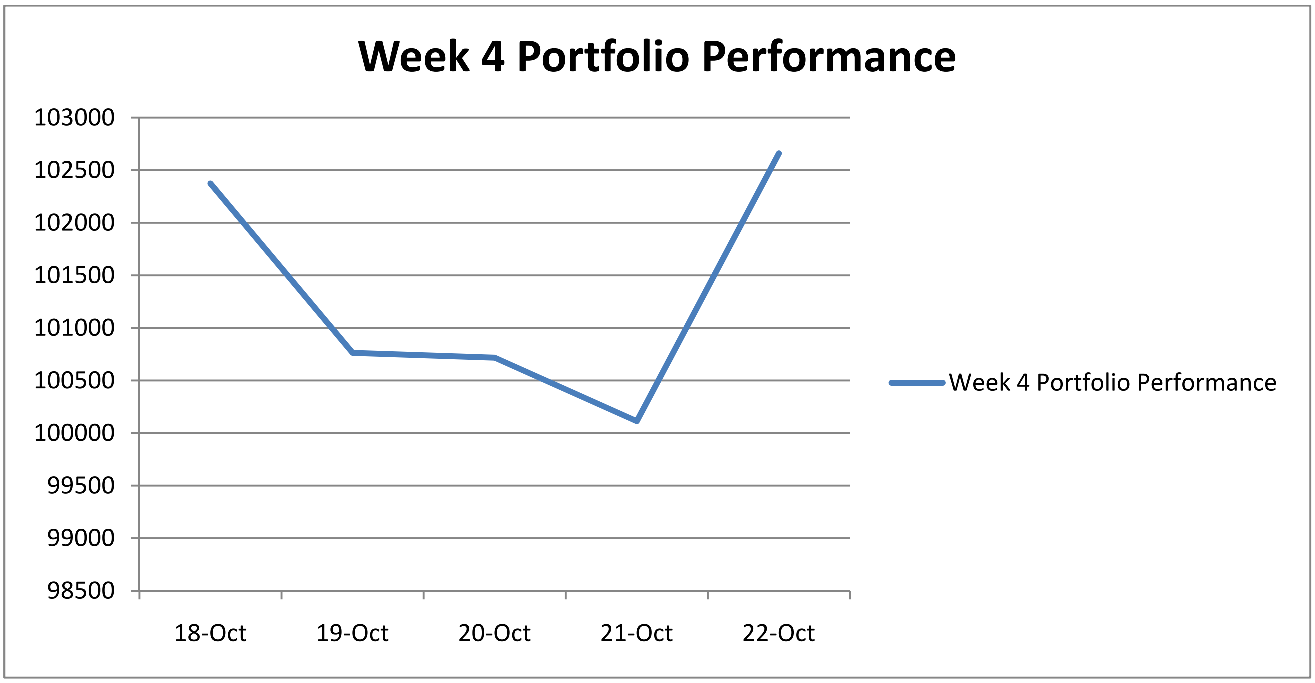

Figure 5.4: Buy-and-hold Portfolio Total Assets for Week 4

5.5.2 Week 4 Buy-and-Hold and Growth Portfolio Total Assets

Table 5.5 shows the total assets after week 4.

Date	Symbol	Buy/ sell	Price	Shares	Net-Cost/ Proceed	Profit/ Loss	Total Cash	Total Portfolio value
Oct. 22	BAC	HOLD	$11.44	1000	$11,440	$1,930	$894.94	
Oct. 22	AMZN	HOLD	$169.13	150	$25,369.50	$2,439.5	$894.94	
Oct. 22	KMX	HOLD	$29.54	896	$26,288.64	$1,316.08	$894.94	
Oct. 22	NVDA	HOLD	$11.80	2000	$23,600	$930	$894.94	
Oct. 22	MHS	HOLD	$51.34	290	$14,888.60	$273.9	$894.94	$100,3029.48

Table 5.5: Buy-and-hold Portfolio Investment Assets for Week 4

5.6 Week 5 Simulation

5.6.1 Analysis of Week 5 Buy-and-Hold and Growth Portfolio trading

As KMX stock seems to be reaching its peak for the duration of the 5-week simulation, I sold it. I made a total profit of $1,747.2 or 7% of the initial investment.

Since this is the end of the simulation, theoretically I have to sell all of my stocks, but I want to keep trading, so I will show the profit I would have made if I had sold my stocks.

Except for Bank of America, all of my chosen stocks have made good growth, particularly Amazon increasing by 8.13 percent in just five weeks. In all, Bank of America was a bad investment, since it's a financial institution greatly affected by the recent and ongoing financial crisis in the United States. However, this is because of the shot-term nature of the simulation. For a normal buy-and hold investment term that last for years, stocks can rise and fall in hard to predict patterns, and investing in Bank of America might turn out to be good investment after all.

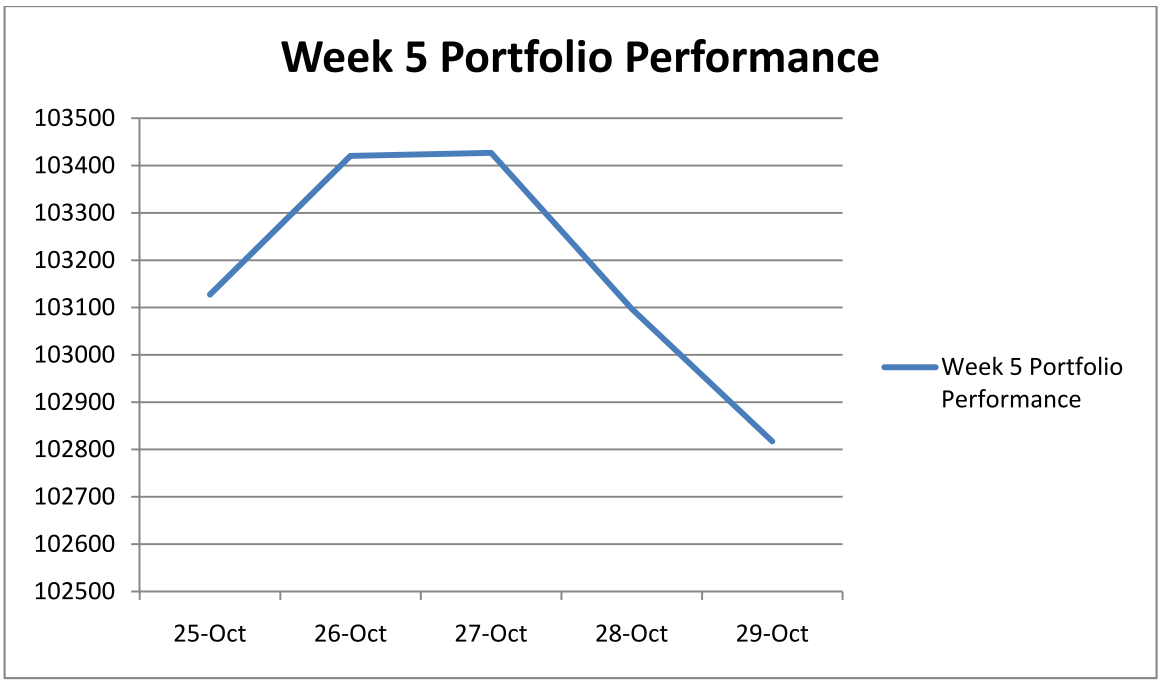

Figure 5.5: Buy-and-hold Portfolio Total Assets for Week 5

5.6.2 Week 5 Buy-and-Hold and Growth Portfolio Total Assets

Table 5.6 shows the total assets after week 5.

After the five-week simulation, I made a total of $2,217.33 as profit, or 2.217 percent increase from my initial investment.

Date	Symbol	Buy/ sell	Price	Shares	Net-Cost/ Proceed	Profit/ Loss	Total Cash	Total Profit
Oct. 29	BAC	SELL	$11.45	1000	$11,450	$1,920	$894.94	
Oct. 29	AMZN	SELL	$165.23	150	$24,784.50	$1,854.50	$894.94	
Oct. 28	KMX	SELL	$29.81	896	$26,709.76	$1,747.2	$894.94	
Oct. 29	NVDA	SELL	$12.02	2000	$24,040	$1,370	$894.94	
Oct. 29	MHS	SELL	$52.53	290	$15,233.07	$70.57	$894.94	$2,217.33

Table 5.6: Buy-and-hold Portfolio Investment Assets for Week 5

VI. Simulation C: Dollar Cost Averaging

The dollar cost averaging simulation consisted of five stocks that met the criteria to make investment. Investors should make regular investments at specific times of the year to make use of the strategy efficiently. Making regular investment is the key to the average dollar cost investing. Since I have only 5 weeks of simulation to make investment, I do not expect huge returns and in some cases, I might end up making no profits at all. I will be using Wallstreetsurvior.com as my simulation program for the rest of the term. The screening to the entire stock market included EPS (earnings per share), Low P/E ratio, and records of the company over the last ten years. The following example would help the readers understand the Dollar Cost Averaging Strategy.

Suppose that you have 15,000 dollars to invest in a certain company by buying the company stocks. If you make a lump sum payment and buy the stocks, you will get 270 shares for the price of 50$ for that day. Then you wait for three years and make decision to sell the shares at the price of 20$. Now you obviously lose money since the value of the shares now would be $5400. However, if you use the dollar-averaging method which is making regular investment at regular times instead of making lump sum payment, you are more likely to end up making profits.

Date of Investing	Payment	Price of a share	Shares
Jan, 2008	$1,250	$50	25
April, 2008	$1,250	$36.56	34
July,2008	$1,250	$35.14	35
Oct,2008	$1,250	$30.12	41
Jan, 2009	$1,250	$30.25	41
April, 2009	$1,250	$26.86	46
July,2009	$1,250	$10.11	23
Oct,2009	$1,250	$21.10	59
Jan, 2010	$1,250	$22.24	56
April, 2010	$1,250	$13.17	94
July, 2010	$1,250	$15.15	82
Oct, 2010	$1,250	$20.12	62
Total	**$15,000**	**Average: $26**	**703**

The chart above shows the scheme of an investor who uses dollar-cost averaging as his investment method. Clearly, at the end of the day, he will have more shares since the initial $15,000 was spread out and allowed him to buy more shares as the stock prices are going down. If he sells his entire share today, he will make $14,144.33. Of course, he still loses some money. However, his breakeven point is no longer $50 in this case. It is $21.33 and every time the price hits above that point, he will make money. The total profit he could make is ($50-$21.33) * 703 which is $20155.01. The bottom line is the investor just needs to wait until the price hits the target and sell the shares to make profit.

(Note: I will buy stocks on different day only when the stock on that day goes down by more than 5%).

6.1 Selection of Stocks

The initial stock market screening returned a list of five stocks that met the rough criteria for dollar cost averaging. I will then analyze the stocks based on the principles discussed in chapter 3. After the screening and a thorough analysis of financial statements, I finally settled on a list of five stocks: Exxon Mobil Corporation, Walt Disney Co (DIS), Wal Mart Stores Inc (WMT), Dell Inc (DELL), and Target (TGT).

Exxon Mobil Corporation (XOM)

The Exxon Mobil Corporation, or ExxonMobil, is an American multinational oil and gas corporation. I chose it for my dollar cost averaging investment because it meets certain important criteria. The market capitalization of the corporation is 316.76B which is considered a very big corporation. This company displays a lot of potential in terms of growth and good fundamentals.

The Price to Earnings ratio of the company is 12.01 which is considered low, and the Earnings per share (EPS) is 5.18 which is very big amount and the return on equity of the company is 19.97% which strongly suggests that the company has been successful. Moreover, if we look at the financial records of the company, the company has an average EPS of 4.59 and average earnings per share growth rate of 22.577%. These all factor into making the final decision of buying stocks from Exxon Mobil Corporation.

Walt Disney Co (DIS)

The Walt Disney Company (NYSE: DIS) is the largest media and entertainment conglomerate in the world in terms of revenue. I chose it for my dollar cost averaging investment because it meets certain important criteria. The market capitalization of the corporation is 63.54B which is considered a very big corporation. This company displays a lot of potential in terms of growth and good fundamentals.

The Price to Earnings ratio of the company is 16.05 which is considered low, and the Earnings per share (EPS) is 2.07 which is very big amount and the return on equity of the company is 11.14% which strongly suggests that the company has been successful. Moreover, if we look at the financial records of the company, the company has an average EPS of 1.211 and average earnings per share growth rate of 56.055% which strongly proves that the company has been grown at a rapid rate over the years. These all factor into making the final decision of buying stocks from Walt Disney Co (DIS).

Wal Mart Stores Inc (WMT)

Wal-Mart Stores, Inc. (formerly branded as Wal-Mart, branded as Wal-Mart since 2008) (NYSE: WMT) is an American public corporation that runs a chain of large discount department stores and a chain of warehouse stores. I chose it for my dollar cost averaging investment because it meets certain important criteria. The market capitalization of the corporation is 193.86B which is considered a very big corporation. This company displays a lot of potential in terms of growth and good fundamentals.

The Price to Earnings ratio of the company is 13.65 which is considered low, and the Earnings per share (EPS) is 3.9 which is very big amount and the return on equity of the company is 22.59% which strongly suggests that the company has been successful. Moreover, if we look at the financial records of the company, the company has an average EPS of 2.496 and average earnings per share growth rate of 11.64% which strongly proves that the company has been grown at a rapid rate over the years. These all factor into making the final decision of buying stocks from Wal Mart Stores Inc (WMT).

Dell Inc (DELL)

Dell Inc (DELL) is a multinational information technology corporation based in Round Rock, Texas, United States, that develops, sells and supports computers and related products and services. I chose it for my dollar cost averaging investment because it meets certain important criteria. The market capitalization of the corporation is 25.20 B which is considered a very big corporation. This company displays a lot of potential in terms of growth and good fundamentals.

The Price to Earnings ratio of the company is 16.41 which is considered low, and the Earnings per share (EPS) is 0.79 which is very big amount and the return on equity of the company is 28.87% which strongly suggests that the company has been successful. Moreover, if we look at the financial records of the company, the company has an average EPS of 1.06 and average earnings per share growth rate of 4.96% which seems to me that the company does not have huge returns to customers. This could be either because instead of giving out the dividends, the company apparently reinvests them in their projects and earn a greater amount of profits. These all factor into making the final decision of buying stocks from Dell Inc (Dell).

Target Corporation (Target)

Target Corporation (Target) is an American retailing company that was founded in Minneapolis, Minnesota in 1902 as the Dayton Dry Goods Company. I chose it for my dollar cost averaging investment because it meets certain important criteria. The market capitalization of the corporation is 38.63 B which is considered a very big corporation. This company displays a lot of potential in terms of growth and good fundamentals.

The Price to Earnings ratio of the company is 14.7 which is considered low, and the Earnings per share (EPS) is 3.64 which is very big amount and the return on equity of the company is 18.23% which strongly suggests that the company has been successful. Moreover, if we look at the financial records of the company, the company has an average EPS of 3.64 and average earnings per share growth rate of 10.9% which strongly proves that the company has been grown at a rapid rate over the years. These all factor into making the final decision of buying stocks from Target Corporation (Target).

6.2 Week 1 Simulations

6.2.1 Analysis of Dollar Cost Averaging Portfolio trading (Week 1)

Because of the nature of dollar cost averaging portfolio, trading is very frequent. There were trades that occur on exact same days of each week during our simulation. Moreover, the data we collected for tracking our investment is below. I started buying stocks on 30th September from the companies that I selected. I bought 2000 dollars worth of stock from each company and I will keep buying stocks at this price every Tuesday and Thursday of the simulation week until

2nd Nov. Then I will buy all the stocks that I have bought and see how much gains and loss are and how effective this strategy is for my simulation.

Date	**Symbol**	**Buy/Sell**	**Price**	**Shares**	**Net Cost/ Proceeds**	**Profits / Loss**	**Total Cash**	**Total Profit**
Sept. 29							$100,000.00	
Sept. 30	DIS	BUY	$33.23	59	$1960.57	-	$98039.43	-
Sept. 30	WMT	BUY	$53.670	37	$1985.80	-	$96053.63	-
Sept. 30	DELL	BUY	$13.0745	154	$2008.92	-	$94044.71	-
Sept. 30	TGT	BUY	$53.77	37	$1989.50	-	$ 92055.21	-
Sept. 30	XOM	BUY	$62.5425	32	$2002.96	-	$90052.25	-

Table 6.1: Dollar Cost Averaging Portfolio Investments Table for Week 1

6.2.2 Dollar Cost Averaging Portfolio Total Assets (Week 1)

Total Assets – Dollar Cost Averaging Portfolio for week 1 (Sept. 27 – Oct. 1)

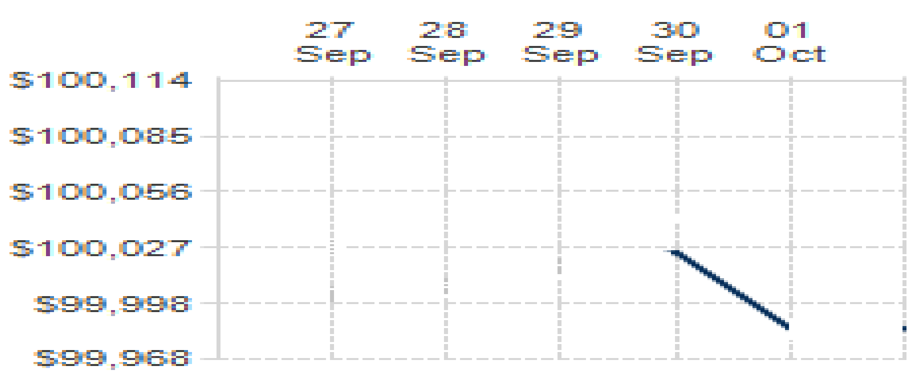

Figure 6.1: Dollar Cost Averaging Total Assets for Week 1

Figure 6.1, above is a representative of the total assets of week 1 for the Dollar Cost Averaging portfolio. The daily value of my portfolio as well as any trading can be seen in Appendix A-3. This is the finalized record of all trades and assets during the five week simulation.

6.3 Week 2 Simulations

6.3.1 Analysis of Dollar Cost Averaging Portfolio trading for Week 2

In the second week of simulation, I kept buying stocks on Tuesday and Thursday and found out that the stocks were increased overall compared to the first week.

Date	Symbol	Buy/Sell	Price	Shares	Net Cost/ Proceeds	Profits / Loss	Total Cash	Total Profit
Sept. 29							$100,000.00	
Sept. 30	DIS	BUY	$33.23	59	$1960.57	-	$98039.43	-
Sept. 30	WMT	BUY	$53.67	37	$1985.80	-	$96053.63	-
Sept. 30	DELL	BUY	$13.07	154	$2008.92	-	$94044.71	-
Sept. 30	TGT	BUY	$53.77	37	$1989.50	-	$ 92055.21	-
Sept. 30	XOM	BUY	$62.54	32	$2002.96	-	$90052.25	-
Oct.05	DIS	BUY	$33.94	59	$2002.46	-	$88049.79	-
Oct.05	WMT	BUY	$54.06	37	$2000.22	-	$86049.57	-
Oct.05	DELL	BUY	$13.47	149	$2007.03	-	$84042.54	-

Oct.05	TGT	BUY	$54.21	36	$1951.56	-	$82090.98	-
Oct.05	XOM	BUY	$63.34	31	$1963.54	-	$80127.44	-
Oct.07	DIS	BUY	$33.77	59	$1992.43	-	$78,135.01	-
Oct.07	WMT	BUY	$54.21	37	$2005.77	-	$76,129.24	-
Oct.07	DELL	BUY	$13.21	150	$1981.50	-	$74,147.74	-
Oct.07	TGT	BUY	$53.77	37	$1989.49	-	$72,158.25	-
Oct.07	XOM	BUY	$63.67	31	$1973.77	-	$70,184.48	-

Table 6.2: Dollar Cost Averaging Portfolio Investments Table for Week 1 and 2.

6.3.2 Dollar Cost Averaging Portfolio Total Assets Week 2

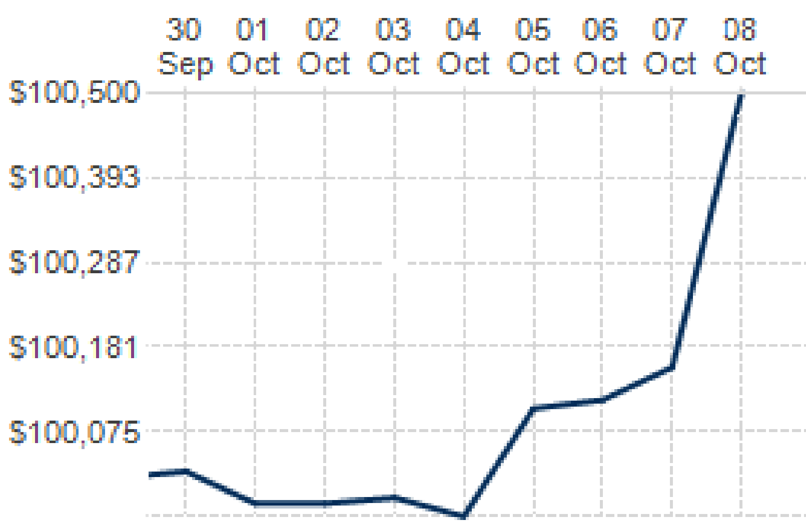

Figure 6.2: Dollar Cost Averaging Total Assets for Week 2

Figure 6.2, above is a representative of the total assets of week 2 for the Dollar Cost Averaging portfolio. The daily value of my portfolio as well as any trading can be seen in

Appendix A-3. This is the finalized record of all trades and assets during the five week simulation.

6.4. Week 3 simulation

6.4.1 Analysis of Dollar Cost Averaging Portfolio trading for Week 3

In the third week of simulation, I bought some stocks on again Tuesday and Friday since Stock prices were more likely to decrease on Friday than on Thursday. I also learned that the stock prices were slightly increased again later on.

Date	Symbol	Buy/Sell	Price	Shares	Net Cost/ Proceeds	Profits / Loss	Total Cash	Total Profit
							$70,184.48	
Oct.12	DIS	BUY	$34.36	59	$2027.24	-	$68,157.24	-
Oct.12	WMT	BUY	$53.83	37	$1991.71	-	$66,165.53	-
Oct.12	DELL	BUY	$13.71	145	$1987.95	-	$64,177.58	-
Oct.12	TGT	BUY	$54.68	36	$1968.48	-	$62,209.10	-
Oct.12	XOM	BUY	$63.34	31	$1963.54	-	$60,245.10	-
Oct.15	DIS	BUY	$34.82	57	$1984.74	-	$58,260.82	-
Oct.15	WMT	BUY	$53.15	37	$1966.55	-	$56,294.27	-
Oct.15	DELL	BUY	$14.39	139	$2000.21	-	$54,294.06	-
Oct.15	TGT	BUY	$54.34	36	$1956.24	-	$52,337.82	-
Oct.15	XOM	BUY	$65.03	30	$1950.90	-	$50,386.92	-
Oct.19	DIS	BUY	$34.27	58	$1987.66	-	$48399.26	-
Oct.19	WMT	BUY	$53.41	37	$1976.17	-	$46423.09	-

Oct.19	DELL	BUY	$14.56	136	$1980.16	-	$44442.93	-
Oct.19	TGT	BUY	$53.51	37	$1979.87	-	$42463.06	-
Oct.19	XOM	BUY	$65.18	30	$1955.40	-	$40507.66	-

Table 6.3: Dollar Cost Averaging Portfolio Investments Table for Week 3.

6.4.2 Dollar Cost Averaging Portfolio Total Assets Week 3

Figure 6.3: Dollar Cost Averaging Total Assets for Week 3

Figure 6.3, above is a representative of the total assets of week 3 for the Dollar Cost Averaging portfolio. The daily value of my portfolio as well as any trading can be seen in Appendix A-3. This is the finalized record of all trades and assets during the five week simulation.

As you can see in the chart, Stocks have been increasing over the weeks and I am not worried that I will end up losing money at the end of the simulation weeks.

6.5 Week 4 simulation

6.5.1 Analysis of Dollar Cost Averaging Portfolio trading for Week 4

In the fourth week of simulation, I bought some stocks on again Tuesday and Thursday. This week looks a little different from the previous weeks and I noticed that all stocks went down after 25th October.

Date	Symbol	Buy/Sell	Price	Shares	Net Cost/ Proceeds	Profits / Loss	Total Cash	Total Profit
							$40,507.66	
Oct.21	DIS	BUY	$34.78	57	$1982.46	-	$38,525.20	-
Oct.21	WMT	BUY	$54.15	36	$1949.40	-	$36,575.80	-
Oct.21	DELL	BUY	$14.70	136	$1999.20	-	$34,576.60	-
Oct.21	TGT	BUY	$54.54	36	$1963.44	-	$32,613.60	-
Oct.21	XOM	BUY	$66.17	30	$1985.10	-	$30,628.06	-
Oct.26	DIS	BUY	$35.50	56	$1988.00	-	$28,640.06	-
Oct.26	WMT	BUY	$54.13	37	$2002.81	-	$26,637.25	-
Oct.26	DELL	BUY	$14.58	137	$1997.46	-	$24,639.79	-
Oct.26	TGT	BUY	$53.62	38	$2037.56	-	$22,602.23	-
Oct.26	XOM	BUY	$66.53	30	$1995.90	-	$20,606.33	-

Table 6.4: Dollar Cost Averaging Portfolio Investments Table for Week 4.

6.5.2 Dollar Cost Averaging Portfolio Total Assets Week 4

Figure 6.4: Dollar Cost Averaging Total Assets for Week 4

Figure 6.4, above is a representative of the total assets of week 4 for the Dollar Cost Averaging portfolio. The daily value of my portfolio as well as any trading can be seen in Appendix A-3. This is the finalized record of all trades and assets during the five week simulation.

As you can see in the chart, Stocks had been increasing until Oct 25^{th} and started to decrease afterwards. If this is the case for the following weeks, I am willing to buy more stocks with the same amount of price since the stock prices will be less than it were before Oct 25^{th}.

6.6 Week 5 simulation

6.6.1 Analysis of Dollar Cost Averaging Portfolio trading for Week 5

In the fifth week of simulation, I bought some stocks on again Tuesday and Thursday and found out that the stock prices were slightly increased compared to the previous weeks.

Date	Symbol	Buy/Sell	Price	Shares	Net Cost/ Proceeds	Profits / Loss	Total Cash	Total Profit
							$20,606.33	
Oct.28	DIS	BUY	$36.26	55	$1982.46	-	$18,612.03	-
Oct.28	WMT	BUY	$53.60	37	$1949.40	-	$16,628.83	-
Oct.28	DELL	BUY	$14.58	136	$1999.20	-	$14,645.95	-
Oct.28	TGT	BUY	$52.27	38	$1963.44	-	$12,659.69	-
Oct.28	XOM	BUY	$66.17	30	$1985.10	-	$10,674.59	-
Nov.2	DIS	BUY	$36.35	54	$1962.90	-	$8711.69	-
Nov.2	WMT	BUY	$54.71	36	$1969.56	-	$6742.13	-
Nov.2	DELL	BUY	$14.17	141	$1997.97	-	$4744.16	-
Nov.2	TGT	BUY	$53.33	37	$1973.21	-	$2770.95	-
Nov.2	XOM	BUY	$67.56	30	$2026.	-	$744.15	-

Table 6.5: Dollar Cost Averaging Portfolio Investments Table for Week 5.

6.6.2 Dollar Cost Averaging Portfolio Total Assets Week 5

Figure 6.5: Dollar Cost Averaging Total Assets for Week 5

Figure 6.5, above is a representative of the total assets of week 5 for the Dollar Cost Averaging portfolio. The daily value of my portfolio as well as any trading can be seen in Appendix A-3. This is the finalized record of all trades and assets during the five week simulation.

As you can see in the chart, Stocks had been increasing until Oct 25th and started to decrease afterwards. The following chart shows the profits and loss if I sell all my stocks at the moment. This is tentative and gives the reader an idea of how I have been doing so far.

Action	Symbol	Stocks	Last Price	Market Value	Profit/Loss	Change in Percentage
Sell	DIS	518	$36.13	$18712.75	$827.84	+4.63%
Sell	DELL	1427	$14.40	$20541.67	$618.40	+3.10%
Sell	XOM	275	$66.49	$18284.75	$487.54	+2.74%
Sell	WMT	332	$54.17	$17984.44	$132.81	+0.74%
Sell	TGT	330	$51.94	$17140.20	-$618.58	-3.48%

Table 6.6: Dollar Cost Averaging Change in Percentage

VII. Comparison of Simulation Results

At the beginning of the Interactive Qualifying Project, each of us chose a different investment strategy and was given $100,000 as capital. By the end of the five-week simulation, each of us had made a profit. The results are as follow:

Duyanh Le made $674.56 using Gap Trading Strategy.

Bao Nguyen made $2,217.33 using Buy-and-Hold Strategy.

Kyaw Thiha made a profit of $5,225 using the Dollar-Cost Averaging strategy,.

For the gap trading strategy I (Duyanh Le) began my Interactive Qualifying Project stating that I would expect to either make a profit or none at all. Here is a summary of my five weeks spent investing in the stock market simulation. During my first week of the stock market simulation, I bought shares of stock and implemented my strategy. Due to the gap trading strategy, my stocks did not meet the two tick mark or the trailing sell point in order to sell them. During my second week of the simulation, I made a few changes to my trading strategy which allowed me to trade the stocks more often which resulted in making some losses and profits here and there. During the third week of the simulation, there was a day of trading where I lost all my profits but made it all back plus an addition increase in profits thanks in large part to rise in the price of the Google stock. During the fourth week of the simulation, I was making a profit at a constant rate. During the fifth and final week of the stock market simulation, I lost nearly all the profits I that made. In the five weeks of investing in the stock market simulation with the gap trading strategy, my highest profit at one point was during the fourth week with a total of $3,534.61. Unfortunately my stocks performed badly after that which resulted in me making a final total profit of $674.56 during the fifth and final week. Even though I finished the simulation with a profit of $674.56, the fact that I was able to make a profit was good enough for me, it was better than losing money.

The buy-and hold strategy is very simple and as such it is the benchmark of investment strategies. Just like the name implies, I chose five companies with good growth potential, good P/E and PEG figures, buy and hold my shares until I choose to sell them. There is not much trading involved, and monitoring and reading news involving the stocks is mainly what this strategy is about. For example, through reading the charts of Carmax.Inc, I was able to know that the stock reached its record height in ten years, and as such, I chose to not take the risk of holding the stock any longer and sold it. On the other hands, even though I could see Bank of America stocks failing, I took the risk to hold it because I believed the stock was making a comeback from a major drop. In the end, I was happy with the amount of money I made with the initial capital. 2.2% increase in five week is a good profit, considering most bonds have only around 4% interest a year.

The essence of Dollar Cost Averaging is to buy stocks at the lowest possible price and buy as many as you could on the chosen date. That will average the overall cost of money and reduce the risks of losing money. Dollar Cost Averaging helps the investor most when he is investing long-term. In my case, I had only 5 weeks of simulation and I had to modify the strategy to fit well the situation. The good thing for my simulation is the stocks were going up for most of the time and I did not have to worry about not making profit. However, the downside for that is I have troubles buying stocks at the lower price which diminished the significance of Dollar Cost Averaging. Even though I made the most profit, I would not say that this is the best strategy for the project.

In short, the Dollar Cost Averaging and Buy and hold Strategies are similar in the way that they are low-risk, less time-consuming strategies aimed at new and inexperienced investors, while Gap Trading is a more precise strategy that uses specific criteria to buy and sell. This explains how Gap Trading Strategy wasn’t as successful as the other two strategies in this simulation.

VIII. Conclusions

8.1 Gap Trading

As previously stated earlier, after the first week of investing in the stock market simulation, it was clear that my strategy needed a change. The two tick mark and trailing sell point of 8% was way too high for any of my stocks to reach. I wasn't able to trade any of my stocks during the first week. After several calculations, I decided on making the one tick mark and trailing sell point to .5%, thus two ticks would be 1%. After the change, it was much easier for my stocks to reach the calculated marks.

Looking back on it now, I should have spent a week before the actual simulation run experimenting with the 8% mark and trailing sell point. That way I would have noticed that my stocks could not reach the 8% mark early on instead of noticing the problem after the first week of the actual simulation. Even though I made a profit after five weeks of investing in the stock market simulation, I feel that I could have made more if I had changed the 8% mark to 1% early on. This change would have allowed me to make trades during the first week of simulation instead of just holding on to them.

It wasn't until after the first week of my simulation that I noticed there was a link between the tick marks, trailing sell points and my chosen stocks. What I noticed was that the 8% I had chosen for my two tick mark and trailing sell point was not a bad choice, it was just a matter of the stocks I had chosen. It seems the buying prices of my four stocks were either too high or too low to hit the 8% mark. Had I chosen stocks where the buying prices were in the dollar range of the single to teen digits, the 8% mark would have been easily targeted. For my simulation run I had chosen stocks where the buying prices ranged from 60, 70, 80, and even over 500 dollars. These prices were too high for the 8% mark, only marks of .5 and 1% were suitable enough. I learned that the higher the buying price of the stock, the lower the two tick mark needs to be. The lower the buying price of the stock, the higher the two tick mark needs to be raised.

During these two terms at Worcester Polytechnic Institute where I spent researching and working on this Interactive Qualifying Project, I was able to learn a lot of things that I never knew before. I learned about the stock market and how it works. How one can invest in the market by implementing one of the many different investing strategies. As for the actual investing in the simulation, I learned how to use the gap trading strategy to try to make a profit. I also learned that it was necessary at times to make changes in order to continue trades or to make a profit. If I had lost money on a given stock one day, chances are that I would make a profit on it the next or vice versa.

The time that I had during the five weeks of investing, especially when I was making a profit and not a loss was an enjoyable one. Investing is a serious matter that takes a lot of time and focus on. If you do not pay attention to the chosen stock of a company, you may miss out on making a huge profit or loss. If I was to invest in the real stock market today, I would confidently state that I now have the tools and knowledge needed to invest.

8.2 Buy-and-Hold Strategy and Growth Investing

After the five week simulation, I made a profit of $2,217.33. This profit, though small, shows that my company choice for the growth portfolio was at least on the right track. Currently, after seven weeks of simulation, my portfolio values at $108,018 compared to the initial $100000 investment.

After the simulation, I had figured out some of the stock types and stock characteristics. The five stocks I chose to invest can be characterized into three types:

Financial stock, from financial companies such as banks and mutual funds: Bank of America (BAC) Consumer stock, from consumer companies which provide services or consumer products: Amazon (AMZN), Medco Health Solutions (MHS) and Carmax (KMX) Industrial stock, from industrial companies with heavy initial investment: Nvidia Coporations (NVDA)

The stocks from these companies performed according to their nature. Bank of America stock progressed closely with the current financial situation in the United States. To tell the truth, it was a bad decision to invest in bank of America for this simulation period. Financial stocks like Bank of America is meant to be bought and held for a long period of over five years for it to make profit, while the simulation is only five weeks. The United States is still undergoing an economic crisis, and during October, when four weeks of simulation took place, many negative events in the financial industry happened, including a massive bank repossession of over 100,000 houses in a month, the first in the United States' history. As such, my Bank of America investment made a loss.

Consumer stocks, in contrast to financial stocks and Industrial stocks, are very energetic and changes quickly by large margins. Both Carmax and Amazon had major changes of over five percent in a relatively short time. These stocks topped my portfolio in profit. However, it is not wise to keep these stocks for the long run. They should be sold when they reach a certain point. For me, Carmax stock reached a record height in three years, so I couldn't take the risk and sold it. At the moment Carmax stock is still rising nonstop. Had I kept this stock, I could be gaining

$3825.92 more from it now. However, this is also the nature of the stock market; it's all about taking risks and unexpected turns.

Industrial stocks are similar to Industrial stocks that they are for the long run. Another characteristic is that they don't change much in a short time, unlike consumer stocks. During the simulation, NVIDIA stock decreased a bit and in the end only made a slight increase.

My portfolio unexpectedly turned out to have many properties of a hedging portfolio, which limits risk by purchasing stocks that are expected to perform in opposite ways. To tell the truth, I decided to purchase Bank of America stock because being a large financial institution; Bank of America seemed to be a "safe" investment. In the end, Bank of America showed bad progress and offset the gain I had from the other stocks.

After the five week simulation, I had learned much about the stock market, its risks and its hard to predict changing nature. I don't expect to be able to trade stocks with full confidence with real money even now, since I haven't seen many aspects of the stock market, for the short duration of the Interactive Qualifying Project didn't permit it, but at least I now have some experience and knowledge required for when I choose to invest in the future. Professional, real stock investing requires long-term experience and high education.

8.3 Dollar Cost Averaging

After running five week long simulation, I was very satisfied to see the results and learned a great deal about Stock Investment. The following chart shows the detailed transaction of my Stock simulation.

Date	Symbol	Buy/Sell	Price	Shares	Commission	Net Cost/Proceed	Total Cash
							100,000
9/30/2010	XOM	Buy	$62.27	40	$10	$2,490.80	$97,499.20
9/30/2010	XOM	Sell	$62.27	-40	$10	$2,490.80	$100,000
9/30/2010	XOM	Buy	$62.28	32	$10	2002.96	$97,997
10/5/2010	XOM	Buy	$62.34	31	$10	1942.54	$96,055
10/7/2010	XOM	Buy	$63.67	31	$10	1983.77	$94,071
10/12/2010	XOM	Buy	$64.34	31	$10	2004.54	$92,066
10/15/2010	XOM	Buy	$65.03	30	$10	1960.9	$90,105
10/19/2010	XOM	Buy	$65.18	30	$10	1965.4	$88,140
10/21/2010	XOM	Buy	$66.17	30	$10	1995.1	$86,145
26-Oct	XOM	Buy	$66.53	30	$10	2005.9	$84,139
28-Oct	XOM	Buy	$66.17	30	$10	1995.1	$82,144
11/2/2010	XOM	Buy	$67.56	30	$10	2036.8	$80,107
9/30/2010	DELL	Buy	$12.98	154	$10	2008.92	$78,098
10/5/2010	DELL	Buy	$13.47	149	$10	2017.03	$76,081
10/7/2010	DELL	Buy	$13.21	150	$10	1991.5	$74,090
10/12/2010	DELL	Buy	$13.71	145	$10	1997.95	$72,092
10/15/2010	DELL	Buy	$14.39	139	$10	2010.21	$70,081
10/19/2010	DELL	Buy	$14.56	136	$10	1990.16	$68,091
10/21/2010	DELL	Buy	$14.70	136	$10	2009.2	$66,082
26-Oct	DELL	Buy	$14.58	137	$10	2007.46	$64,075
28-Oct	DELL	Buy	$14.58	136	$10	1992.88	$62,082
11/2/2010	DELL	Buy	$14.17	141	$10	2007.97	$60,074
9/30/2010	DIS	Buy	$33.22	59	$10	1969.98	$58,104
10/5/2010	DIS	Buy	$33.94	59	$10	2012.46	$56,091
10/7/2010	DIS	Buy	$33.77	59	$10	2002.43	$54,089
10/12/2010	DIS	Buy	$34.36	58	$10	2002.88	$52,086
10/15/2010	DIS	Buy	$34.82	57	$10	1994.74	$50,091
10/19/2010	DIS	Buy	$34.27	58	$10	1997.66	$48,094
10/21/2010	DIS	Buy	$34.78	57	$10	1992.46	$46,101
26-Oct	DIS	Buy	$35.50	56	$10	1998	$44,103
28-Oct	DIS	Buy	$36.26	55	$10	2004.3	$42,099
11/2/2010	DIS	Buy	$36.35	54	$10	1972.9	$40,126
9/30/2010	TGT	Buy	$53.50	37	$10	1989.5	$38,136
10/5/2010	TGT	Buy	$54.21	36	$10	1961.56	$36,175
10/7/2010	TGT	Buy	$53.77	37	$10	1999.49	$34,175
10/12/2010	TGT	Buy	$54.68	36	$10	1978.48	$32,197
10/15/2010	TGT	Buy	$54.34	36	$10	1966.24	$30,231
10/19/2010	TGT	Buy	$53.51	37	$10	1989.87	$28,241
10/21/2010	TGT	Buy	$54.54	36	$10	1973.44	$26,267

26-Oct	TGT	Buy	$53.62	37	$10	1993.94	$24,273
28-Oct	TGT	Buy	$52.27	38	$10	1996.26	$22,277
11/2/2010	TGT	Buy	$53.33	37	$10	1983.21	$20,294
9/30/2010	WMT	Buy	$53.40	37	$10	1985.8	$18,308
10/5/2010	WMT	Buy	$54.06	37	$10	2010.22	$16,298
10/7/2010	WMT	Buy	$54.21	37	$10	2015.77	$14,282
10/12/2010	WMT	Buy	$53.83	37	$10	2001.71	$12,280
10/15/2010	WMT	Buy	$53.15	37	$10	1976.55	$10,304
10/19/2010	WMT	Buy	$53.41	37	$10	1986.17	$8,318
10/21/2010	WMT	Buy	$54.15	36	$10	1959.4	$6,358
26-Oct	WMT	Buy	$54.13	37	$10	2012.81	$4,345
28-Oct	WMT	Buy	$53.60	37	$10	1993.2	$2,352
11/2/2010	WMT	Buy	$54.71	36	$10	1979.56	$373

Table 6.7(a): Dollar Cost Averaging Detailed Transaction 1

At the end of the five week simulation run, I had a total of 3035 shares for 99627 dollars. During the simulation weeks, I noticed that the selected stocks had been increasing week after weeks and I tried to wait for the best time of the day to buy more stocks will less money. In other words, I set the boundaries for my trading and I started buying when it reached the lower bound. If it went up beyond the upper bound, I held back and did the buying the next day. As I mentioned in the previous chapters, the rule of thumb for every person who invests in the stock market is “Buy Low and Sell High”. This theory still holds in Dollar Cost Averaging strategy, and I sold all my stocks back on 4th November which is two days after I completed buying the stocks. The following chart has the detailed information of the stock transaction for the last week.

Date	Symbol	Buy/Sell	Price	Shares	Commission	Net Cost/Proceed	Total Cash
11/4/2010	XOM	SELL	$67.92	305	$10	20705.6	20705.6
11/4/2010	DELL	SELL	$36.82	572	$10	21051.04	41756.64
11/4/2010	DIS	SELL	$14.51	1568	$10	22741.68	64498.32
11/4/2010	TGT	SELL	$55.75	367	$10	20450.25	84948.57
11/4/2010	WMT	SELL	$55.21	368	$10	20307.28	105255.85

Table 6.7(b): Dollar Cost Averaging Detailed Transaction 2

The total amount of money that I made at the end of the simulation run is $105,225.85 (adjusted for commission fees of $10). I used the Wallstreetsurvivor.com and I was given initially $100,000. I spread it out over 5 weeks and in the end, I made $5,225 dollars as profit. This is satisfying since I did not expect to make that much. The essence of my strategy is to reduce market risk through the systematic purchase of securities (stocks) at predetermined intervals and set amounts. I would say “luck” also played a part in my simulation since all stocks increased most of the time. I picked the stocks by their EPS (earnings per share), Low P/E ratio, and records of the company over the last five years. As I mentioned previously, investing a large sum of money in the market takes more risks than investing partially and dollar-cost averaging has shown you the best example of that. However, I have to admit that the significance of dollar-cost averaging was undermined in this case since stocks were increasing constantly and I could barely buy the stocks at lower prices. I found out that if I had invested lump sum, I would have made 115,609.49 dollars in total which will give me $15,609 as profit. But this result did not really diminish the usefulness of the strategy, since I was able to do the trading in the safety margin (stocks never reached the break-even points) and that led to the success of my simulation.

In conclusion, I am really happy with the results and learned a great deal about simulation from this IQP project. It was a great experience and I believe I can apply the knowledge and tools that I learned from the project into future investment.

IX. Company Profiles

Columbia Sportswear Company (COLM)
Index Membership: NASDAQ
Sector: Consumer Cyclical
Industry: Apparel/Accessories

Columbia Sportswear Company (Columbia) is engaged in the design, sourcing, marketing and distribution of outdoor apparel, footwear, accessories and equipment. In addition to its Columbia Sportswear brand, the Company also designs, develops, markets and distributes outdoor apparel, footwear, accessories and equipment under the Mountain Hardwear, Sorel, Montrail and Pacific Trail brands. During the year ended December 31, 2009, Columbia's products were sold in over 100 countries. The Company operates in four geographic segments: United States; Europe, Middle East and Africa, Latin America and Asia Pacific, and Canada. In September 2010, the Company acquired OutDry Technologies S.r.l. from Nextec S.r.l. http://research.scottrade.com/public/stocks/snapshot/snapshot.asp?symbol=COLM

Costco Wholesale Corporation (COST)
Index Membership: NASDAQ
Sector: Services
Industry: Retail (Specialty)

Costco Wholesale Corporation (Costco) operates membership warehouses that offer its members low prices on a limited selection of branded and selected private label products in a range of merchandise categories. It buys the majority of its merchandise directly from manufacturers and route it to a depot or directly to its warehouses. Its depots receive container based shipments from manufacturers and reallocate these goods for shipment to its individual warehouses, generally in less than 24 hours. Its warehouse format averages approximately 143,000 square feet. Its warehouses operate on a seven-day, 69-hour week. It carries an average of approximately 3,900 active stock keeping units per warehouse in its core warehouse business. Many consumable products are offered for sale only in case, carton, or multiple-pack quantities only. Costco Mexico, its 50% owned joint venture, operated 32 warehouses as of August 29, 2010. http://research.scottrade.com/public/stocks/snapshot/snapshot.asp?symbol=COST

Google Inc. (GOOG)
Index Membership: NASDAQ
Sector: Technology
Industry: Computer Services

Google Inc. maintains an index of Websites and other online content, and makes this information freely available through its search engine to anyone with an Internet connection. Its automated search technology helps people obtain nearly instant access to relevant information from its online index. It generates revenue primarily by delivering online advertising. Businesses use its AdWords program to promote their products and services with targeted advertising. In addition, the thousands of third-party Websites that comprise the Google Network use its AdSense program to deliver relevant ads that generate revenue and enhance the user experience. In September 2009, the Company acquired ReCAPTCHA Inc., a spin-off of Carnegie Mellon University's Computer Science Department. In February 2010, it acquired Aardvark. In February 2010, it acquired On2 Technologies, Inc. In August 2010, it acquired Slide, a social technology company. In August 2010, it acquired Angstro.

http://research.scottrade.com/public/stocks/snapshot/snapshot.asp?symbol=GOOG

Panera Bread Company. (PNRA)
Index Membership: NASDAQ
Sector: Services
Industry: Restaurants

Panera Bread Company (Panera Bread) along with its subsidiaries is a national bakery-cafe concept with 1,380 Company-owned and franchise-operated bakery-cafe locations in 40 states and in Ontario, Canada. The Company operates under the Panera Bread, Saint Louis Bread Co. and Paradise Bakery & Café trademark names. The Company operates in three business segments: Company bakery-cafe operations, franchise operations and fresh dough operations. As of December 29, 2009, Panera Bread's Company bakery-cafe operations segment consisted of 585 Company-owned bakery-cafes, all located in the United States, and its franchise operations segment consisted of 795 franchise-operated bakery-cafes, located throughout the United States and in Ontario, Canada. As of December 29, 2009, the fresh dough operations segment, which supplies fresh dough items daily to Company-owned and franchise-operated bakery-cafes, consisted of 23 fresh dough facilities (21 Company-owned and two franchise-operated). http://research.scottrade.com/public/stocks/snapshot/snapshot.asp?symbol=PNRA

Wal Mart Stores Inc.(WMT)
Index Membership:NYSE
Sector:Services
Industry: Retail (Department & Discount)

Wal-Mart Stores, Inc. (Walmart) operates retail stores. The Company operates in three business segments: Walmart U.S., International and Sam's Club. During the fiscal year ended January 31, 2010 (fiscal 2010), The Walmart U.S. segment accounted for 63.8% of its net sales, and operated retail stores in different formats in the United States, as well as Walmart's online retail operations, walmart.com. The International segment consists of retail operations in 14 countries and Puerto Rico. During fiscal 2010, the segment generated 24.7% of the Company's net sales. The International segment includes different formats of retail stores and restaurants, including discount stores, supercenters and Sam's Clubs that operate outside the United States. The Sam's Club segment consists of membership warehouse clubs in the United States and the segment's online retail operations, samsclub.com. During fiscal 2010, Sam's Club accounted for 11.5% of its net sales.

http://research.scottrade.com/public/stocks/snapshot/snapshot.asp?symbol=WMT

Target Corporation (TGT)
Index Membership: NYSE
Sector:Services
Industry:Retail (Department & Discount)

Target Corporation (Target) operates Target general merchandise stores with an assortment of general merchandise and food items. During the fiscal year ended January 30, 2010 (fiscal 2009), the Target stores also included a deeper food assortment, including perishables and an offering of dry, dairy and frozen items. In addition, the Company operates SuperTarget stores with a line of food and general merchandise items. Target.com offers an assortment of general merchandise, including various items found in its stores and a complementary assortment, such as extended sizes and colors, sold only online. It operates in two segments: Retail and Credit Card. The Retail segment includes all of its merchandising operations, including its general merchandise and food discount stores in the United States and its integrated online business. The Credit Card segment offers credit to qualified guests through its branded credit cards, the Target Visa and the Target Card (collectively, REDcards).

http://research.scottrade.com/public/stocks/snapshot/snapshot.asp?symbol=TGT

Walt Disney Co (DIS)
Index Membership:NYSE
Sector:Services
Industry: Broadcasting and TV cables

The Walt Disney Company, together with its subsidiaries, is a diversified worldwide entertainment company. The Company operates in five segments: Media Networks, Parks and Resorts, Studio Entertainment, Consumer Products and Interactive Media. On September 15, 2009, the Company and the Hearst Corporation (Hearst) both contributed their 50% interests in Lifetime Entertainment Services LLC (Lifetime) to A&E Television Networks, LLC (AETN) in exchange for an interest in AETN. In December 2008, the Company acquired an additional 26% interest in Jetix Europe N.V. In December 2009, the Company announced that it has completed its acquisition of Marvel Entertainment Inc., a character franchise company. In July 2010, the Company acquired Tapulous, Inc., a developer of music games for the iPad, iPhone, and iPod Touch. Through a merger agreement, Tapulous became a wholly owned subsidiary of The Walt Disney Company reporting into Disney Interactive Media Group.

http://research.scottrade.com/public/stocks/snapshot/snapshot.asp?symbol=DIS

Exxon Mobil Corporation (XOM)
Index Membership: NYSE
Sector: Energy
Industry: Oil & Gas- Integrated

Exxon Mobil Corporation (Exxon Mobil) is a manufacturer and marketer of commodity petrochemicals, including olefins, aromatics, polyethylene and polypropylene plastics and a range of specialty products. It also has interests in electric power generation facilities. The Company has several divisions and hundreds of affiliates with names that include ExxonMobil, Exxon, Esso or Mobil. Divisions and affiliated companies of ExxonMobil operate or market products in the United States and other countries of the world. Their principal business is energy, involving exploration for, and production of, crude oil and natural gas, manufacture of petroleum products and transportation and sale of crude oil, natural gas and petroleum products. At December 31, 2009, approximately 7.5 billion oil-equivalent barrels (GOEB) of the Company's reserves were classified as proved undeveloped, which represented 33% of the 23 GOEB reported in proved reserves.

http://research.scottrade.com/public/stocks/snapshot/snapshot.asp?symbol=XOM

Dell Inc (DELL)
Index Membership: NASDAQ
Sector: Technology
Industry: Computer Hardware

Dell Inc. (Dell) is a holding company, which conducts its business globally, through its subsidiaries. It offers a range of product categories, including mobility products, desktop personal computers (PCs), software and peripherals, servers and networking, and storage. The services include a range of configurable information technology (IT) and business related services, including infrastructure technology, consulting and applications, and business process services. The Company operates in four global business segments: Large Enterprise, Public, Small and Medium Business, and Consumer. On November 3, 2009, Dell completed the acquisition of Perot Systems Corporation (Perot Systems). In fiscal 2009, the Company completed the acquisition of The Networked Storage Company, MessageOne, Inc. and Allin Corporation.

http://research.scottrade.com/public/stocks/snapshot/snapshot.asp?symbol=DELL

CarMax, INC (KMX)
Index Membership: NYSE
Sector: Services
Industry: Retail

CarMax, Inc., through its subsidiaries, operates as a retailer of used vehicles in the United States. It also sells new vehicles under various franchise agreements. In addition, the company provides a range of related products and services, including the financing of vehicle purchases through its finance operation, CarMax Auto Finance, and third-party lenders; the sale of extended service plans and accessories; the appraisal and purchase of vehicles directly from consumers; and vehicle repair services. Further, it sells vehicles that do not meet its retail standards to licensed dealers through on-site wholesale auctions. As of February 28, 2010, the company operated 59 production superstores and 41 non-production superstores. CarMax, Inc. was founded in 1993 and is based in Richmond, Virginia..

http://finance.yahoo.com/q/pr?s=KMX+Profile

Amazon.com, Inc (AMZN)
Index Membership: NASDAQ
Sector: Services
Industry: Retail

Amazon.com, Inc. operates as an online retailer in North America and internationally. The company operates various retail Web sites, including amazon.com, amazon.co.uk, amazon.de, amazon.fr, amazon.co.jp, amazon.ca, and amazon.cn. Its product categories include books; movies, music, and games; digital downloads; electronics and computers; home and garden; toys, kids, and baby; grocery; apparel, shoes, and jewelry; health and beauty; sports and outdoors; and tools, auto, and industrial. The company serves its consumer customers through its retail Websites and focuses on selection, price, and convenience. It also offers programs that enable seller customers to sell their products on its Websites and their own branded Websites. In addition, the company serves developer customers through Amazon Web Services, which provides access to technology infrastructure that developers can use to enable virtually any type of business. Further, it manufactures and sells the kindle e-reader. Additionally, the company offers co-branded credit card programs, fulfillment, and other marketing and promotional services, such as online advertising. Amazon.com, Inc. was founded in 1994 and is headquartered in Seattle, Washington.

http://finance.yahoo.com/q/pr?s=AMZN+Profile

NVIDIA Corporations (NVDA)
Index Membership: NASDAQ
Sector: Technology
Industry: Semiconductors

NVIDIA Corporation (NVIDIA) is a provider of visual computing technologies and the inventor of the graphics processing unit (GPU). The Company's products are designed to generate graphics on workstations, personal computers, game consoles and mobile devices. NVIDIA serves the entertainment and consumer market with its GeForce graphics products, the professional design and visualization market with its Quadro graphics products, the computing market with its Tesla computing solutions products, and the mobile computing market with its Tegra system-on-a-chip products. NVIDIA operates in four major product-line operating segments: the GPU business, the professional solutions business (PSB), the media and communications processor (MCP), business, and the consumer products business (CPB). The Company's GPU business is comprised primarily of its GeForce products that support desktop and notebook personal computers. Its PSB is comprised of its NVIDIA Quadro professional workstation products.

http://research.scottrade.com/public/stocks/snapshot/snapshot.asp?symbol=nvda&go.x=0&go.y=0&go=Go

Bank of America Corporation (BAC)
Index Membership: NYSE
Sector: Financial
Industry: Money Center Banks

Bank of America Corporation is a bank holding company, and a financial holding company. The Company is a financial institution, serving individual consumers, small and middle market businesses, large corporations and governments with a range of banking, investing, asset management and other financial and risk management products and services. Through its banking subsidiaries (the Banks) and various nonbanking subsidiaries throughout the United States and in selected international markets, it provides a range of banking and nonbanking financial services and products through six business segments: Deposits, Global Card Services, Home Loans & Insurance, Global Commercial Banking, Global Banking & Markets, Global Wealth & Investment Management, with the remaining operations recorded in All Other.

http://research.scottrade.com/public/stocks/snapshot/snapshot.asp?symbol=bac&go.x=0&go.y=0&go=Go

Medco Health Solutions, Inc (MHS)
Index Membership: NYSE
Sector: Services
Industry: Drug Wholesale

Medco Health Solutions, Inc. (Medco) is a healthcare company. It provides clinically-driven pharmacy services designed to improve the quality of care and lower total healthcare costs for private and public employers, health plans, labor unions and government agencies of all sizes, and for individuals served by Medicare Part D Prescription Drug Plans. During the fiscal year ended December 26, 2009 (fiscal 2009), the Company administered 695 million prescriptions. In January 2010, the Company completed the acquisition of DNA Direct Inc. In April 2008, Medco acquired a majority interest in Europa Apotheek Venlo B.V. (Europa Apotheek), which provides mail-order pharmacy services in Germany. In 2009, Medco formed a joint venture with United Drug plc, a pan-European healthcare provider, to provide home-based pharmacy care services in the United Kingdom for patients covered by the country's National Health Service.

http://research.scottrade.com/public/stocks/snapshot/snapshot.asp?symbol=mhs&go.x=0&go.y=0&go=Go

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Appendix

A-1 Gap Trading Finalized Records

Symbol	Shares	Sept. 27	Sept. 28	Sept. 29	Sept. 30	Oct.1
COLM	430	57.51	58.86	58.48	58.44	58.31
COST	390	63.73	65.00	64.67	64.49	65.05
GOOG	46	530.41	527.17	527.69	525.79	525.62
PNRA	280	89.25	88.69	89.16	88.61	88.34

Symbol	Shares	Oct. 4	Oct. 5	Oct. 6	Oct. 7	Oct. 8
COLM	430	57.83	59.07	59.00	59.09	_
COLM	420	_	_	_	_	60.21
COST	390	64.56	64.66	65.41	65.25	_
COST	385	_	_	_	_	64.29
GOOG	46	522.35	538.23	534.35	530.0	_
GOOG	47	_	_	_	_	536.35
PNRA	280	88.44	91.60	88.66	89.88	89.11

Symbol	Shares	Oct. 11	Oct. 12	Oct. 13	Oct. 14	Oct. 15
COLM	400	60.62	_	60.04	58.00	_
COLM	416	_	60.56	_	_	57.77
COST	390	64.32	63.34	63.36	63.18	63.70

GOOG	47	538.84	_	_	_	_
GOOG	46	_	541.39	543.30	540.93	601.45
PNRA	280	90.14	90.67	90.88	_	_
PNRA	270	_	_	_	91.74	92.03

Symbol	**Shares**	**Oct. 18**	**Oct. 19**	**Oct. 20**	**Oct. 21**	**Oct. 22**
COLM	400	57.96	56.85	57.29	_	_
COLM	444	_	_	_	57.51	52.53
COST	390	63.21	62.21	62.61	63.60	_
COST	400	_	_	_	_	64.03
GOOG	41	617.71	607.83	607.98	611.99	612.53
PNRA	270	91.08	90.46	89.91	89.66	94.90

Symbol	**Shares**	**Oct. 25**	**Oct. 26**	**Oct. 27**	**Oct. 28**	**Oct. 29**
COLM	444	51.88	_	_	_	_
COLM	400	_	51.61	_	_	_
COLM	487	_	_	52.49	52.14	_
COLM	481	_	_	_	_	52.25
COST	400	64.11	63.68	62.98	62.80	62.77
GOOG	41	616.50	618.60	616.47	618.58	_
GOOG	40	_	_	_	_	613.70
PNRA	270	94.23	94.25	89.52	90.42	_
PNRA	279	_	_	_	_	89.51

A-2 Buy-and-Hold Method and Growth Finalized Records

Symbol	Shares	Sept. 27	Sept. 28	Sept. 29	Sept. 30	Oct.1
AMZN	150	159.37	159.70	157.88	157.06	153.71
NVDA	2000	12	11.97	11.88	11.68	11.35
MHS	290	50.87	51.89	51.69	52.06	52.29
KMX	896	27.42	27.51	27.68	27.86	27.79
BAC	1000	13.24	13.27	13.11	13.10	13.30

Symbol	Shares	Oct. 4	Oct. 5	Oct. 6	Oct. 7	Oct. 8
AMZN	150	155.39	160.87	155.40	156.27	155.55
NVDA	2000	11.24	11.32	10.78	10.70	10.86
MHS	290	51.64	53.12	52.67	52.81	52.62
KMX	896	27.73	27.77	27.86	28.08	29.65
BAC	1000	13.15	13.56	13.39	13.31	13.18

Symbol	Shares	Oct. 11	Oct. 12	Oct. 13	Oct. 14	Oct. 15
AMZN	150	153.03	156.48	155.17	155.53	164.64
NVDA	2000	10.81	11.02	11.34	11.16	11.29
MHS	290	52.60	52.77	53.17	52.84	53.33
KMX	896	29.68	29.43	29.46	29.46	29.66
BAC	1000	13.15	13.52	13.29	12.60	11.98

Symbol	Shares	Oct. 18	Oct. 19	Oct. 20	Oct. 21	Oct. 22
AMZN	150	163.56	158.67	158.67	164.97	169.13
NVDA	2000	11.36	11.29	11.29	11.09	11.80
MHS	290	53.72	52.42	51.97	50.68	51.34
KMX	896	29.36	29.56	29.71	29.28	29.54
BAC	1000	12.34	11.80	11.75	11.36	11.44

Symbol	Shares	Oct. 25	Oct. 26	Oct. 27	Oct. 28	Oct. 29
AMZN	150	169.00	169.95	167.51	166.84	165.23
NVDA	2000	11.91	11.87	12.04	12.05	12.02
MHS	290	52.45	52.63	52.51	52.18	52.53
KMX	896	29.79	29.90	29.64	29.48	30.99
BAC	1000	11.16	11.30	11.54	11.53	11.45

A-3 Dollar Cost Averaging Finalized Records

Symbol	Shares	Sept. 27	Sept. 28	Sept. 29	Sept. 30	Oct.1
DIS	59	-	-	-	33.10	32.34
WMT	37	-	-	-	53.51	53.36
DELL	154	-	-	-	12.97	13.04
TGT	37	-	-	-	53.44	53.47
XOM	32	-	-	-	61.79	62.54

Symbol	Shares	Oct. 4	Oct. 5	Oct. 6	Oct. 7	Oct. 8
DIS	118	33.14	33.83	33.72	33.92	34.53
WMT	74	53.57	54	54.56	54.37	54.41
DELL	299	12.90	13.4	13.22	13.27	13.69
TGT	73	53.42	54.24	54.07	54.32	54.17
XOM	62	62.19	63.26	63.94	63.85	64.34

Symbol	Shares	Oct.11	Oct.12	Oct. 13	Oct. 14	Oct.15
DIS	116	33.14	34.36	33.72	33.92	34.82
WMT	74	53.57	53.83	54.56	54.37	53.15
DELL	284	12.90	13.71	13.22	13.27	14.39
TGT	72	53.42	54.68	54.07	54.32	54.34
XOM	61	62.19	63.34	63.94	63.85	65.03

Symbol	Shares	Oct.18	Oct. 19	Oct. 20	Oct. 21	Oct. 22
DIS	115	33.14	34.27	33.72	34.78	34.53
WMT	73	53.57	53.41	54.56	54.15	54.41
DELL	272	12.90	14.56	13.22	14.70	13.69
TGT	73	53.42	53.51	54.07	54.54	54.17
XOM	60	62.19	65.18	63.94	66.17	64.34

Symbol	Shares	Oct. 25	Oct. 26	Oct.27	Oct. 28	Oct. 29
DIS	111	33.14	35.50	33.72	36.26	34.53

WMT	74	53.57	54.13	54.56	53.60	54.41
DELL	273	12.90	14.58	13.22	14.58	13.69
TGT	76	53.42	53.62	54.07	52.27	54.17
XOM	60	62.19	66.53	63.94	66.17	64.34